

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL DIVERSITY,)	
LIVING RIVERS, SIERRA CLUB,)	
UTAH PHYSICIANS FOR A)	
HEALTHY ENVIRONMENT, and)	
WILDEARTH GUARDIANS,)	
)	
Petitioner(s),)	22-1020
)	
v.)	
)	
SURFACE TRANSPORTATION BOARD,)	
the U.S. FISH & WILDLIFE SERVICE,)	
and THE UNITED STATES OF)	
AMERICA,)	
)	
Respondents.)	

PETITION FOR REVIEW

The Center for Biological Diversity, Living Rivers, Sierra Club, Utah Physicians for a Healthy Environment, and WildEarth Guardians (collectively, “Petitioners”) hereby petition the United States Court of Appeals for the District of Columbia Circuit for review of the decision of the Surface Transportation Board (“Board”) entered and served on December 15, 2021, in Docket No. FD 36284, “Seven County Infrastructure Coalition—Rail Construction & Operation Exemption—in Utah, Carbon, Duchesne, and Uintah Counties, Utah.” The Board’s decision is attached as Exhibit A. The challenged decision granted final approval

for construction and operation of the Whitmore Park Alternative of the proposed rail line. *See* Ex. A.

Further, Petitioners seek review of an arbitrary and capricious biological opinion issued September 20, 2021 by the U.S. Fish & Wildlife Service, and the Board's reliance on the flawed biological opinion, the terms of which are incorporated into the Board's decision. *See* Ex. A (Board's Decision) at 50 ("BIO-MM-9. The Coalition shall comply with the terms and conditions of the USFWS Biological Opinion for the protection of federally listed threatened and endangered plants and animals that could be affected by the rail line, and to ensure compliance with Endangered Species Act Section 7."). Because the biological opinion was prepared in the course of the Board's proceeding to approve the new rail line and incorporated into the Board's decision, the Court has jurisdiction to review Petitioners' challenge to the biological opinion and the Board's reliance on the biological opinion. *See City of Tacoma v. Taxpayers of Tacoma*, 357 U.S. 320, 336 (1958) (court's jurisdiction encompasses "all issues inhering in the controversy" over which it has exclusive jurisdiction). The U.S. Fish & Wildlife Service is therefore also named as a respondent to this Petition, and Petitioners seek review of the Service's September 20, 2021 Biological Opinion on which the Board relies.

Venue is proper in this Court per 28 U.S.C. § 2343. Pursuant to Federal Rule of Appellate Procedure 15(c) and 28 U.S.C. § 2344, a copy of the Board's final

decision and a list of parties to the decision are attached hereto as Exhibit A and Exhibit B, respectively. A copy of the U.S. Fish & Wildlife Service's September 20, 2021 Biological Opinion is attached hereto as Exhibit C.

CORPORATE DISCLOSURE STATEMENT

Pursuant to Fed. R. App. P. 26.1, Petitioners Center for Biological Diversity, Living Rivers, Sierra Club, Utah Physicians for a Healthy Environment, and WildEarth Guardians certify that they have no parent companies, subsidiaries, or affiliates that have issued shares to the public.

Respectfully submitted February 11, 2022,

s/ William John Snape, III
William John Snape, III
Center for Biological Diversity
American University Law School
4300 Nebraska Ave, NW
Washington, D.C. 20016
(202) 536-9351
bsnape@biologicaldiversity.org
wsnape@wcl.american.edu.

*Attorney for Petitioners Center for Biological Diversity, Living Rivers,
Sierra Club, Utah Physicians for a Healthy Environment, and
WildEarth Guardians*

CERTIFICATE OF SERVICE

I hereby certify, in accordance with Fed. Rule of App. Proc. 15(c)(1), that on February 11, 2022, a true copy of the foregoing Petition for Review and attachments was sent via FedEx, to each of the following:

Craig Keats, General Counsel
Office of General Counsel
Surface Transportation Board
395 E Street, SW
Washington DC 20423

*Counsel for Surface Transportation
Board*

Martha Williams, Principal Deputy
Director
U.S. Fish & Wildlife Service
1849 C St., NW
Washington, DC 20240

Kathryn Kusske Floyd
Margaret K. Fawal
Venable, LLP
600 Massachusetts Avenue NW
Washington, DC 20001

*Counsel for Seven County
Infrastructure Coalition*

The Hon. Merrick Garland
Attorney General of the United States
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001

Matthew M. Graves, U.S. Attorney for
the District of Columbia
United States Attorney's Office
555 4th Street, NW
Washington, DC 20530

*Counsel for the United States and U.S.
Fish & Wildlife Service*

Darrell Fordham
Argyle Wilderness Preservation Alliance
511 South 600 East
Lehi, UT 84043

Thomas F. McFarland, Esq.
Law Office of Thomas F. McFarland
208 South LaSalle Street, Suite 1666
Chicago, IL 60604-1228

*Counsel for Argyle Wilderness
Preservation Alliance*

Charles A. Spitulnik
Kaplan Kirsch
1634 I (Eye) Street, NW, Suite 300
Washington, DC 20006

Nathan Hunt
Kaplan Kirsch
1675 Broadway, Suite 2300
Denver, CO 80202

Counsel for Eagle County, Colorado

Julie Mach
419 H Street
Salida, CO 81201

P.T. Wood
448 E 1st Street
Salida, CO 81201

Alan H. Robinson
33700 Mt. Harvard Circle
Buena Vista, CO 81211

Edred Secakuku, Vice Chair
Ute Indian Tribe Business Committee
Ute Indian Tribe of the Uintah &
Ouray Reservation
P.O. Box 190
Fort Duchesne, UT 84026

Date: February 11, 2022

s/ William John Snape, III
William John Snape, III
Center for Biological Diversity
American University Law School
4300 Nebraska Ave, NW
Washington, D.C. 20016
(202) 536-9351
bsnape@biologicaldiversity.org
wsnape@wcl.american.edu.

*Attorney for Petitioners Center for Biological Diversity, Living Rivers,
Sierra Club, Utah Physicians for a Healthy Environment, and
WildEarth Guardians*

EXHIBIT A

Surface Transportation Board Decision on Review

51032
EB

SERVICE DATE – DECEMBER 15, 2021

SURFACE TRANSPORTATION BOARD

DECISION

Docket No. FD 36284

SEVEN COUNTY INFRASTRUCTURE COALITION—RAIL CONSTRUCTION &
OPERATION EXEMPTION—IN UTAH, CARBON, DUCHESNE, AND UINTAH
COUNTIES, UTAH

Digest:¹ This decision grants final approval for an exemption sought by the Seven County Infrastructure Coalition to construct and operate a new line of railroad in Utah, subject to certain environmental mitigation conditions.

Decided: December 15, 2021

In 2020, the Seven County Infrastructure Coalition (Coalition) filed a petition for exemption under 49 U.S.C. § 10502 from the prior approval requirements of 49 U.S.C. § 10901 for authorization to construct and operate an approximately 85-mile rail line connecting two termini in the Uinta Basin (Basin) near South Myton Bench, Utah, and Leland Bench, Utah, to the national rail network at Kyune, Utah (the Line). According to the Coalition, the Line would provide shippers in the Basin with a viable alternative to trucking, which is currently the only available transportation option. (Pet. for Exemption 13-15.)

On January 5, 2021, the Board issued a decision assessing the transportation merits of the proposed transaction and preliminarily concluding, subject to completion of the ongoing environmental review, that the proposal meets the statutory standard for an exemption on the transportation merits. Seven Cnty. Infrastructure Coal.—Rail Constr. & Operation Exemption—in Utah, Carbon, Duchesne, & Uintah Cntys., Utah (January 5 Decision), FD 36284, slip op. at 8-10 (STB served Jan. 5, 2021) (86 Fed. Reg. 1564) (with Board Member Oberman dissenting). The Board noted that it was not granting the exemption or allowing construction to begin and that after the Board has considered the potential environmental impacts associated with this proposal and weighed those potential impacts with the transportation merits, it would issue a final decision either granting the exemption, with conditions, if appropriate, or denying it. Id. at 2. The Board received petitions for reconsideration of the January 5 Decision and denied those requests in a decision served on September 30, 2021. Seven Cnty. Infrastructure Coal.—Rail Constr. & Operation Exemption—in Utah, Carbon, Duchesne, & Uintah Cntys., Utah (September 30 Decision), FD 36284 (STB served Sept. 30, 2021) (with Board Member Oberman dissenting).

¹ The digest constitutes no part of the decision of the Board but has been prepared for the convenience of the reader. It may not be cited to or relied upon as precedent. See Pol’y Statement on Plain Language Digs. in Decisions, EP 696 (STB served Sept. 2, 2010).

The Board's Office of Environmental Analysis (OEA), in cooperation with stakeholders, tribes, and federal, state, and local agencies, has completed a thorough environmental analysis that reviewed the potential environmental impacts that could result from the proposed project, culminating in a Final Environmental Impact Statement (Final EIS) served on August 6, 2021. OEA reviewed a number of build alternatives and a No-Action (or No-Build) Alternative to take a "hard look" at potential environmental impacts as required by the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-4370m-12. The environmental review process has included extensive opportunity for public participation as well as input from agencies and other interested parties. Based on this analysis, OEA identifies the Whitmore Park Alternative as its Environmentally Preferable Alternative for the Line because it would avoid or minimize major environmental impacts compared to the two other build alternatives, as discussed in more detail below. OEA also recommends environmental conditions (including both voluntary mitigation proposed by the Coalition and additional mitigation developed by OEA) to avoid, minimize, or mitigate the transaction's potential environmental impacts.

In this decision, the Board will grant final approval for a construction and operation exemption for the Whitmore Park Alternative, subject to OEA's final recommended environmental mitigation measures, with minor changes. The environmental mitigation is set forth in Appendix B to this decision.

BACKGROUND

On May 29, 2020, the Coalition filed a petition for exemption from the prior approval requirements of 49 U.S.C. § 10901 under 49 U.S.C. § 10502 to construct and operate the Line, which will connect with Union Pacific Railroad Company (UP) at Kyune, Utah. The Coalition notes that it is an independent political subdivision of the State of Utah, whose member counties include Carbon, Daggett, Duchesne, Emery, San Juan, Sevier, and Uintah Counties. (Pet. for Exemption 5.) It was formed to, among other things, identify and develop infrastructure projects that will promote resource utilization and development. (Id.)

The Coalition asserts that goods produced or consumed in the Basin now can be transported only by truck and that the proposed project would give shippers an additional freight transportation option, eliminating longstanding transportation constraints. (Id. at 13-15.) It explains that adding a rail transportation option would provide local industries the opportunity to access new markets and increase their competitiveness in the national marketplace, and that the removal of transportation constraints would benefit oil producers, mining companies, ranchers, farmers, and other local industries. (Id. at 15.)

The Coalition argues that regulation of the construction and operation of the proposed line under § 10901 is not needed to carry out the rail transportation policy (RTP) at 49 U.S.C. § 10101, that the project would promote several provisions of the RTP, and that an application under § 10901 is not required to protect shippers from an abuse of market power. (Pet. for Exemption 21-22.) In considering the petition, the Coalition asked that the Board follow a two-step approach, addressing the transportation aspects of the project in advance of the environmental issues. (Id. at 26-28.)

The Board received filings both supporting and opposing the petition for exemption. Several government officials filed comments in support of the petition for exemption. January 5 Decision, FD 36284, slip op. at 3.² The opponents included the Center for Biological Diversity (CBD), the Argyle Wilderness Preservation Alliance (Argyle), and numerous individuals. Id. at 1.

In its January 5 Decision, the Board addressed the substantive comments, concluded that an application was not necessary, and found the requested approach of issuing a preliminary decision on the transportation merits appropriate. The Board preliminarily concluded, subject to completion of the ongoing environmental and historic review, that the proposed transaction meets the statutory standards for exemption under § 10502. January 5 Decision, FD 36284, slip op. at 1. As noted above, the Board stated that it was not granting the exemption or allowing construction to begin and that after the Board has considered the potential environmental impacts associated with this proposal and weighed those potential impacts with the transportation merits, it would issue a final decision either granting the exemption, with conditions, if appropriate, or denying it. Id. at 2.

The Board received petitions for reconsideration of the January 5 Decision from Eagle County, Colo., on January 25, 2021, and CBD on January 26, 2021. The agency denied those requests in its September 30 Decision, where among other things, the Board rejected arguments that an application was required because of concerns related to potential reactivation of the Tennessee Pass Line in Colorado and that the Board's consideration of the statutory standards for exemption in the January 5 Decision was inadequate. September 30 Decision, FD 36284, slip op. at 3, 5-7.

During this time, OEA was conducting its environmental review of potential impacts from constructing and operating the Line. As part of this process, OEA issued a Notice of Intent to Prepare an EIS on June 19, 2019, a Final Scope of Study for the EIS on December 13, 2019, and a Draft EIS on October 30, 2020. The Draft EIS analyzed three Action Alternatives for the proposed Line, as well as the No-Action Alternative. The three alternatives examined were the Indian Canyon Alternative, Wells Draw Alternative, and Whitmore Park Alternative. (Draft EIS S-5.) Each of the Action Alternatives would extend from two terminus points in the Basin near Myton, Utah, and Leland Bench to a proposed connection with UP's existing Provo Subdivision near Kyune. (Id. at S-7.). A map of the Action Alternatives is found at Appendix A of this decision. The Indian Canyon Alternative, Wells Draw Alternative, and Whitmore Park Alternative would be approximately 81 miles, 103 miles, and 88 miles in length, respectively.

² To date, the Board has received letters supporting the project from the Ute Indian Tribe of the Uintah and Ouray Reservation (Ute Indian Tribe), U.S. Senators Mitt Romney and Mike Lee and U.S. Representatives Rob Bishop, Chris Stewart, John Curtis, Burges Owens, and Blake Moore. The Board also received letters supporting the project from state officials, including Utah's former Governor Gary R. Herbert, its current Governor Spencer J. Cox, Lieutenant Governor Deidre M. Henderson, State Senate President J. Stuart Adams, and State House Speaker Brad Wilson.

(Draft EIS S-7.) In its request for authority, the Coalition identified the Whitmore Park Alternative as its preferred route for the Line.

Based on the analysis in the Draft EIS, OEA concluded that construction and operation of any of the Action Alternatives would result in environmental impacts, some of which would be significant. (*Id.* at S-7 to 13.) OEA preliminarily concluded, however, that, among the three Action Alternatives, the Whitmore Park Alternative would result in the fewest significant impacts on the environment. (*Id.* at S-12.)

OEA invited agency and public comment on the Draft EIS, including its preliminary conclusion on the Whitmore Park Alternative and the conditions OEA preliminarily recommended to mitigate the impacts of constructing and operating any of the Action Alternatives. OEA established a comment period, which it agreed to extend several times upon request, until February 12, 2021. OEA also conducted six online public meetings during the comment period. In total, OEA received 1,934 comment submissions on the Draft EIS, including both written and oral comments. (Final EIS S-5.)

In the Final EIS, OEA includes all of the comments received on the Draft EIS and OEA's responses to substantive comments, as well as all changes to the analysis that resulted from the comments. OEA concludes that the Whitmore Park Alternative is indeed the Environmentally Preferable Alternative, and that if the Board decides to permit construction and operation of a rail line, the Board should authorize that alternative to minimize impacts of construction and operation on the environment. (Final EIS 2-48.) OEA also provides its final recommendations for environmental mitigation to minimize potential environmental impacts. (*Id.* at Chapter 4.)

On August 25, 2021, the State of Utah (State) filed in support of the Coalition's project but asked that OEA modify several mitigation measures that OEA recommends in the Final EIS. In addition, the U.S. Environmental Protection Agency (USEPA) filed comments on the Final EIS on September 2, 2021, recommending certain changes to an air emissions dispersion model that OEA ran as part of the environmental review process. On October 1, 2021, the Ute Indian Tribe filed a comment in response to the Final EIS stating that it supports the rail construction project. CBD filed a comment on October 18, 2021, and supplemental exhibits on November 8, 2021, raising objections to the exemption sought by the Coalition, the Final EIS, and a related Biological Opinion (BO) issued by the U.S. Fish and Wildlife Service (USFWS) on September 20, 2021.³

³ CBD simultaneously filed a petition asking that the Board accept its comment into the record. It claims that the Board has a compelling interest in accepting the filing, partly to allow the agency to fully consider the impacts of the project. (CBD Comment 1, Oct. 18, 2021.) The Coalition filed in opposition to CBD's request on October 22, 2021. In the interest of a complete record, CBD's filing as well as the other filings commenting on the Final EIS will be accepted into the record. See Alaska R.R.—Constr. & Operation Exemption—Rail Line Between N. Pole & Delta Jct., Alaska, FD 34658, slip op. at 6 (STB served Jan. 6, 2010).

DISCUSSION AND CONCLUSIONS

The construction and operation of new railroad lines requires prior Board authorization, through either a certificate under 49 U.S.C. § 10901 or, as requested here, an exemption under 49 U.S.C. § 10502 from the prior approval requirements of § 10901. Section 10901(c) is a permissive licensing standard that directs the Board to grant rail line construction proposals unless the agency finds the proposal “inconsistent with the public convenience and necessity.” Thus, Congress has established a presumption that rail construction projects are in the public interest and should be approved unless shown otherwise. See Alaska R.R.—Constr. & Operation Exemption—Rail Line Extension to Port MacKenzie, Alaska, FD 35095 (STB served Nov. 21, 2011), aff’d sub nom. Alaska Survival v. STB, 705 F.3d 1073 (9th Cir. 2013).

Under § 10502(a), the Board must exempt a proposed rail line construction from the prior approval requirements of § 10901 when the Board finds that: (1) application of those procedures is not necessary to carry out the RTP of 49 U.S.C. § 10101; and (2) either (a) the proposal is of limited scope, or (b) the full application procedures are not necessary to protect shippers from an abuse of market power.

In the January 5 Decision, the Board determined that the Line would enhance competition by providing shippers in the area with a freight rail option that does not currently exist and that the Line would foster sound economic conditions in transportation, consistent with § 10101(4) and (5). January 5 Decision, FD 36284, slip op. at 9. Additionally, the Board found that § 10101(2) and § 10101(7) would be furthered by an exemption because it would minimize the need for federal regulatory control over the rail transportation system and reduce regulatory barriers to entry by minimizing the time and administrative expense associated with the construction and commencement of operations. January 5 Decision, FD 36284, slip op. at 9.

The Board also discussed Argyle’s claims that § 10101(8), concerning public safety, and § 10101(11), concerning safe working conditions, would be undermined by the project because rail traffic could cause forest fires and substantial truck traffic. Id. at 8. The Board noted that it takes these concerns seriously and that they would be examined as part of OEA’s environmental review and further examined by the Board in its final decision. Id. at 9.

Nothing in the environmental record calls into question the Board’s determination in the January 5 Decision that § 10101(2), (4), (5), and (7) would be furthered by the rail construction project. Moreover, as discussed below and in the Final EIS, nothing in the environmental record raises significant concerns regarding § 10101(8) and (11). The Board therefore reaffirms its analysis here and now turns to consideration of the environmental aspects of the proposed project.

Environmental Analysis

1. The Requirements of NEPA

NEPA requires federal agencies to examine the environmental impacts of proposed major federal actions and to inform the public concerning those effects. See Balt. Gas & Elec. Co. v.

Nat. Res. Def. Council, 462 U.S. 87, 97 (1983). Under NEPA and related environmental laws, the Board must consider significant potential environmental impacts in deciding whether to authorize a railroad construction as proposed, deny the proposal, or grant it with conditions (including environmental mitigation conditions). The purpose of NEPA is to focus the attention of the government and the public on the likely environmental consequences of a proposed action before it is implemented to minimize or avoid potential adverse environmental impacts. See Marsh v. Or. Nat. Res. Council, 490 U.S. 360, 371 (1989). While NEPA prescribes the process that must be followed, it does not mandate a particular result. See Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989). Thus, once the adverse environmental effects have been adequately identified and evaluated, the Board may conclude that other values outweigh the environmental costs. Id. at 350-51.

The Board has assessed the Action Alternatives, OEA's final recommended environmental mitigation, and OEA's conclusions regarding the environmental impacts associated with this construction proposal. The Board has also fully considered the entire environmental record, including the Draft EIS, public comments, the Final EIS, and the comments received following issuance of the Final EIS from the State, CBD, USEPA, and the Ute Indian Tribe. CBD, generally, argues that the Final EIS fails to sufficiently analyze and disclose environmental impacts or recommend appropriate mitigation. (CBD Comment 2-6, Oct. 18, 2021.) Most of these objections, however, are objections CBD already had raised when commenting on the Draft EIS. Below, the Board briefly discusses OEA's analysis of several major issues previously raised in comments on the Draft EIS and then responds to the major issues raised following issuance of the Final EIS by CBD and the State as well as USEPA's request to modify some of the recommended environmental mitigation in the Final EIS. The Draft EIS and Final EIS discuss many issues beyond what the Board addresses in this decision; however, the Board adopts OEA's analysis and conclusions in those documents, even if specific issues are not addressed here.

In the Final EIS, OEA identifies the major environmental impacts that could result from construction and operation of the Line. These major impacts include impacts on water resources, impacts on special status species, impacts from wayside noise during rail operations, impacts related to land use and recreation, socioeconomic impacts, and issues of concern to the Ute Indian Tribe, including impacts on cultural resources. During the EIS process, OEA also analyzed other types of environmental impacts that OEA concluded would not be significant if the Coalition's voluntary mitigation measures and OEA's recommended mitigation measures were implemented. These minor impacts include impacts on vehicle safety and delay, impacts related to rail operations safety, impacts on big game, impacts on fish and wildlife, impacts on vegetation, impacts related to geology and soils, impacts on hazardous waste sites, impacts from construction-related noise, vibration impacts, impacts related to energy resources, impacts on paleontological resources, and visual impacts.

2. Range of Alternatives

NEPA requires that federal agencies consider reasonable alternatives to the proposed action. Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195-96 (D.C. Cir. 1991). To be considered, an alternative must be "'reasonable [and] feasible' in light of the ultimate purpose

of the project.” Protect Our Cmty. Found. v. Jewell, 825 F.3d 571, 580-81 (9th Cir. 2016) (quoting City of Carmel-by-the-Sea v. U.S. Dep’t of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997)); see also Busey, 938 F.2d at 195 (“rule of reason” applies to the selection and discussion of alternatives). Here, the three Action Alternatives were developed as part of a years-long review of routes by the Utah Department of Transportation (UDOT) and the Coalition, and finally OEA. (Final EIS Sec. 2.2.) OEA determined the range of reasonable alternatives by first looking at potential conceptual routes. (*Id.*) In evaluating these conceptual routes, OEA looked at many factors, including logistical constraints, the potential for disproportionately significant environmental impacts, and construction and operations costs. (*Id.*) As explained in detail in Chapter 2 of the Final EIS, the primary reasons certain identified conceptual routes were not moved forward for analysis in the EIS were because they were infeasible due to the prevailing topography surrounding the Basin and because they would require substantial cut-and-fill and large or numerous bridges, as well as numerous large tunnels to pass through mountains. For these reasons and after extensive analysis, OEA determined that there were three reasonable Action Alternatives, one of which was the Environmentally Preferable Whitmore Park Alternative. (*Id.* at Chapter 2.)

CBD contends that the Final EIS does not consider a reasonable range of alternatives. (CBD Comment 70-71, Oct. 18, 2021.) CBD, however, does not identify any alternative routes that OEA did not analyze that CBD contends are reasonable. Nor does CBD provide any evidence that conceptual routes not moved forward for analysis as alternatives in the EIS are in fact reasonable. CBD asserts that OEA should have considered electrified rail or another “solutionary alternative.” (*Id.* at 71.) Electrified rail, however, would not satisfy the proposed project’s purpose and need because of the capital costs associated with electrification. (Final EIS App. T-83-84.) Those costs, including installing power generating stations and overhead powerlines for the entire length of the approximately 85-mile rail line, would render the Line infeasible.⁴ As a result, OEA’s determination as to the range of reasonable alternatives is consistent with NEPA and the “rule of reason” applicable to every environmental analysis. See Busey, 938 F.2d at 195-96; Jewell, 825 F.3d at 581 (any potential alternative must be viewed in the context of its feasibility and consistency with agency goals); Env’t Def. Fund, Inc. v. Andrus, 619 F.2d 1368, 1375 (10th Cir. 1980). The Board adopts OEA’s analysis and concludes that the Final EIS’s selection of alternatives, along with the extensive discussion in the Final EIS regarding why numerous theoretical alternatives were not feasible or did not otherwise meet the project’s purpose and need, was reasonable and in compliance with NEPA.

3. Special Status Species

Special status species include species that are listed or proposed to be listed as threatened or endangered under the Endangered Species Act (ESA); candidate species for ESA listing; bald and golden eagles; and sensitive species listed by the U.S. Bureau of Land Management (BLM),

⁴ Additionally, there is a significant possibility that the infrastructure required for an electrified rail line itself could adversely affect biological resources, including the greater sage-grouse. (See, e.g., Final EIS 3.4-33 (discussing potential adverse effects on wildlife caused by power distribution lines, communications towers, and fences), 3.15-27 (discussing potential adverse effects on greater sage-grouse caused by power lines).)

the U.S. Forest Service (Forest Service), the State, or the Ute Indian Tribe. (Final EIS Sec. 3.4.1.) Any of the Action Alternatives would impact special status species. For example, the Action Alternatives would all cross suitable habitat for several plant species that are listed as threatened or endangered under the ESA, including Pariette cactus, Uinta Basin hookless cactus, Barneby ridge-cress, and Ute ladies'-tresses.⁵ (*Id.* at S-8.)

The Coalition has presented voluntary mitigation measures to lessen the impacts to special status species. Additionally, OEA has consulted with USFWS and other appropriate agencies to develop appropriate measures for further avoiding, minimizing, or mitigating impacts on those species. (*Id.* at S-8.) For example, pursuant to VM-39 and one of OEA's mitigation measures, BIO-MM-9, the Coalition must comply with the terms and conditions of USFWS's BO, which specifies that the Coalition shall, as appropriate and possible, fund the permanent protection of habitat for ESA-listed plant species as compensatory mitigation for the loss of occupied habitat for those plants. (BO 64-71.) The Board is satisfied that, if implemented, the Coalition's voluntary mitigation measures and OEA's additional recommended mitigation measures related to biological resources would lessen impacts of construction and operation on animal and plant species, including ESA-listed species and any potential permanent loss of existing habitat in the rail-line footprint. (Final EIS 3.4-63.)

Any of the Action Alternatives would also cross habitat for the greater sage-grouse, a bird species that is managed by BLM and the State. (*Id.* at S-8.) The Action Alternatives would each pass near one or more greater sage-grouse leks, which are areas where male grouse perform mating displays and where breeding and nesting occur. (*Id.*) Depending on the Action

⁵ CBD criticizes the Final EIS for not conducting field surveys of all of the Action Alternatives to establish a baseline population for each of the threatened or endangered plants species and, instead, planning to conduct those surveys after the EIS process is completed. (CBD Comment 62-64, Oct. 18, 2021.) While field surveys were conducted to establish the presence and extent of suitable habitat for each threatened or endangered plant species along each of the Action Alternatives, OEA appropriately did not conduct clearance surveys that would establish baseline populations for those species as part of the EIS process. Per USFWS guidelines, clearance surveys are only valid for one year and, if construction is authorized, it is anticipated that construction would last two to three years and start no earlier than 2022. *See* USFWS's Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants (USFWS 2011) at <https://www.fws.gov/utahfieldoffice/Documents/Plants/USFWS%20UtahFO%20Plant%20Survey%20Guidelines%20Final.pdf>. Therefore, any clearance surveys conducted during the EIS phase would be outdated at the time of construction and would not provide useful information about the locations of individual plants at the time that impacts on those plants would occur. (Final EIS T-198-99.) Although OEA did not conduct clearance surveys to establish baseline populations, OEA, in consultation with USFWS, used a combination of suitable habitat field surveys and USFWS mapping data as the best available data to assess impacts on threatened and endangered plant species, while also providing for clearance surveys to be conducted after the EIS process so that those clearance surveys will be in compliance with USFWS guidelines and will provide accurate data about the locations of individual plants at the relevant time.

Alternative, several of those leks could experience significant increases in noise during construction and rail operations, which would disturb the birds and potentially cause them to abandon the leks. (*Id.*) OEA has determined that the Whitmore Park Alternative would avoid or minimize impacts on greater sage-grouse that would result under the other Action Alternatives because the Whitmore Park Alternative would be located the furthest distance away from the greatest number of leks and associated summer brood rearing habitat.⁶ (Final EIS S-8.) To lessen impacts on the greater sage-grouse, the Coalition also volunteered a number of mitigation measures. OEA recommends additional mitigation measures in the Final EIS. With both OEA's final recommended mitigation, and the Coalition's voluntary mitigation, all of which the Board will impose, the EIS properly finds that, particularly under the Whitmore Park Alternative, the impacts on greater sage-grouse would not be significant.⁷ (*Id.*)

In its comments on the Final EIS, the State asks that OEA remove BIO-MM-20, a Final EIS mitigation measure prohibiting construction during greater sage-grouse mating and nesting season. The State explains that eliminating the condition will help the Utah Division of Wildlife Resources and the Coalition negotiate a final mitigation agreement concerning the greater sage-grouse (State Comment 3, Aug. 25, 2021.) The State later filed this agreement on September 27, 2021, and the document provides significant additional mitigation to further lessen impacts on the greater sage-grouse. (State Filing 5-6, Sept. 27, 2021.)

Among the mitigation in the final mitigation agreement are steps to lessen noise during construction and operation, including, to the greatest degree practicable, limiting railroad operational noise to no more than 10 decibels above the ambient level at the edge of the lek during breeding season (March 1 to May 15) and limiting use of horns to emergency situations.⁸

⁶ Reduction in impacts, including those on greater sage-grouse, is, in fact, one of the primary reasons that the Whitmore Park Alternative was developed. (Draft EIS 2-25.)

⁷ CBD criticizes the data and methodology OEA used in its analysis of impacts on the greater sage-grouse, including the locations of the baseline ambient noise level measurements, the noise levels deemed to cause disturbance of greater sage-grouse, and a claimed failure to account for declining population levels. (CBD Comment 48-56, Oct. 18, 2021.) The Final EIS thoroughly explains why these criticisms are misplaced and how the data and methodologies used by OEA in the EIS are supported by the record. (See Final EIS 3.4-45 to 46, 3.4-48 to 49, 3.4-58 to 62; App. T-184, T-203-05, T-208-09.) Moreover, determining the best data and methodology upon which to rely is a determination that falls well within the agency's discretion. *Jewell*, 825 F.3d at 583-85 (upholding agency's discretionary decision not to conduct nocturnal migratory bird survey because agency's determination was a discretionary one and "founded on reasonable inferences from scientific data").

⁸ CBD asserts that the mitigation proposed for the greater sage-grouse, as well as for numerous other resources and impacts, such as threatened and endangered plants, big game, geological hazards, revegetation of temporarily disturbed construction areas, and recreational resources, is insufficient because it includes plans to continue developing specific mitigation actions as the project progresses or as based on continuing consultation with other agencies and the Ute Indian Tribe. (CBD Comment 72-79, Oct. 18, 2021.) However, explicit concrete detail and definitive actions not subject to further evaluation or refinement are not required in an

(State Filing 6, Sept. 27, 2021.) CBD asks that the Board prohibit train operations during greater sage-grouse mating season between 6:00 a.m. and 9:00 a.m. (CBD Comment 56, Oct. 18, 2021.) The Board generally does not restrict how railroads choose to conduct their operations. In any event, it is not necessary to consider CBD's request as the final mitigation agreement provides more protection for the greater sage-grouse than the mitigation recommended in the Final EIS, including limits on train noise and hours of operation. (Compare Final EIS Sec. 4-7 with State Filing 5-6, Sept. 27, 2021.) Therefore, the Board will not adopt CBD's request to limit operations. However, as discussed below in the Board Mitigation section, the Board will grant the State's request to remove BIO-MM-20 recommended in the Final EIS and instead will impose the measures in the final mitigation agreement.

As part of the NEPA process for this project and pursuant to Section 7 of the ESA, on September 20, 2021, USFWS issued its BO evaluating the effects of the project on endangered and threatened species. The BO presents USFWS's conclusions regarding likely impacts on ESA-listed species and details the data and information on which it bases those conclusions. The BO concludes that the proposed project is not likely to jeopardize the continued existence of the ESA-listed plants or fish or result in the adverse modification of the endangered fishes' habitat. (BO 47-49.) CBD makes a generalized claim that the BO is flawed and asserts, among other things, that the BO does not rely on current data, arbitrarily limits the area of study, and fails to consider the effects of oil and gas development that would be spurred by the Line on listed plant species. (CBD Comment 6, Oct. 18, 2021.) However, the BO is a USFWS document that neither OEA nor the Board have the authority to revise. Moreover, CBD previously raised these claims of flaws in its comments on OEA's draft Biological Assessment (BA), which was appended to the Draft EIS.

OEA addressed comments on the draft BA in the Final EIS and revised the BA in response to comments, as appropriate, before submitting the BA to USFWS to begin formal consultation with USFWS. (Final EIS T-203.) Thus, CBD's concerns do not lead the Board to conclude that it should not rely on the BO.

4. Wildfires

OEA's analysis also thoroughly addresses the possibility of trains sparking wildfires along the routes of the Action Alternatives. OEA notes that the Forest Service has created a Wildfire Hazard Potential (WHP) map. (Final EIS 3.4-16.) According to the map, approximately 90% of the study areas for the Indian Canyon Alternative and Whitmore Park Alternative, and approximately 87.4% of the study area for the Wells Draw Alternative, are

agency's discussion and development of appropriate mitigation. Rather, what is required under both NEPA and the NEPA-implementing regulations of the Council on Environmental Quality is "a reasonably complete discussion of possible mitigation measures." Bussey, 938 F.2d at 206 (quoting Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352 (1989)); see also Theodore Roosevelt Conservation P'ship v. Salazar, 616 F.3d 497, 516-17 (D.C. Cir. 2010) (upholding an adaptive management plan because NEPA does not require "agencies to make detailed, unchangeable mitigation plans for long-term development projects"). The Final EIS's discussion of mitigation is reasonably complete and therefore complies with NEPA.

associated with very low, low, or moderate wildfire hazard potential. (*Id.*) The Final EIS further determined that the “very high” WHP is not present in the study areas for any Action Alternative. (*Id.*) Moreover, the Final EIS concludes that the probability of a train-induced forest fire is very low because trains only cause a small percentage of fires (*id.* at Table 3.4-7) and improvements in locomotive technology further lessen the risk. (*Id.* at 3.4-42.)

Nonetheless, to further reduce the risk of wildfires, OEA recommends mitigation requiring the Coalition to develop and implement a wildfire management plan in consultation with appropriate state and local agencies, including local fire departments (BIO-MM-7). Further, OEA recommends that the plan incorporate specific information about operations, equipment, and personnel on the Line that might be of use in case a fire occurs and should evaluate and include, as appropriate, site-specific techniques for fire prevention and suppression. OEA reasonably concludes that, if its recommended mitigation is implemented, the impacts of wildfire on vegetation would not be significant. (*Id.* at 3.4-42 to 43.)

In response to comments received on the Draft EIS, OEA also considered impacts from rail operations along existing rail line segments downline of the proposed rail line for some biological resources, including impacts related to wildfires. (*Id.* at 3.4-43.) Trains originating or terminating on the proposed rail line could be an ignition source for wildfires along existing rail lines outside of the study area. However, because those existing rail lines are active rail lines that have been in operation for many years, construction and operation of the Line would not introduce a new ignition source for wildfires along the downline segments. (*Id.*) Moreover, for the reasons discussed above, the probability that a train would trigger a wildfire is very low, and nearly 90% of the area along the downline segments has no WHP or has a very low or low WHP. (*Id.* at Table 3.4-9.) OEA therefore concludes that the downline wildfire impact of the proposed rail line would not be significant. (*Id.* at 3.4-43.) The Board adopts OEA’s reasonable analysis concerning wildfires and will impose OEA’s final recommended mitigation regarding a wildfire management plan.

5. Land Use and Recreation

Most of the area surrounding any of the Action Alternatives is rural and sparsely populated. The Indian Canyon Alternative and Whitmore Park Alternative both have five residences in their respective study areas, and nine residences are located in the study area of the Wells Draw Alternative. (*Id.* at 3.11-4.) However, all of the Action Alternatives could significantly affect land uses on public, private, or tribal lands. (*Id.* at S-9.) The Indian Canyon Alternative and Whitmore Park Alternative would each cross inventoried roadless areas within Ashley National Forest and Tribal trust land within the Ute Indian Tribe’s reservation. (*Id.*) The Wells Draw Alternative would cross the Lears Canyon Area of Critical Environmental Concern and Lands with Wilderness Characteristics on BLM-administered lands. Noise and visual impacts would disturb recreational activities on those public lands, such as camping, hiking, and hunting, as well as recreational activities on private and tribal lands. (*Id.*)

As the Final EIS explains, construction and operation of the Line would result in unavoidable consequences on land use and recreation, including the permanent loss of irrigated cropland and grazing land, the severance of properties, and visual and noise disruption of

recreational activities on public and private lands. OEA concludes that these unavoidable impacts on land use and recreation would be locally significant because each of the Action Alternatives would permanently alter existing land use and the availability and quality of recreational activities in the study area, including special designation areas on public lands. However, the Coalition has proposed voluntary mitigation measures and OEA is recommending additional mitigation measures to avoid or minimize impacts on land use and recreation. (*Id.* at 3.11-28.) The Board adopts OEA's reasonable analysis of impacts on land use and recreation and will impose all of OEA's final recommended mitigation.

6. Vehicle Safety and Delay

Construction and operation of any of the Action Alternatives would introduce new vehicles (such as construction vehicles) on public roadways and would require the construction of new at-grade road crossings. (*Id.* at S-10.) Among the three Action Alternatives, the Wells Draw Alternative would involve constructing the most at-grade road crossings and would result in the greatest potential for vehicle accidents and vehicle delays at those new crossings. Because it is the longest Action Alternative, construction of the Wells Draw Alternative would also result in the greatest vehicle disruption. (*Id.* at 3.1-20.) Because it is the shortest Action Alternative and would require the fewest new at-grade road crossings, the Indian Canyon Alternative would result in the least impacts on vehicle safety and delay. (*Id.*)

Any of the Action Alternatives would generate limited additional road traffic, primarily associated with employees commuting. (*Id.* at 3.1-8.) On some local roads, operations would reduce truck traffic because some freight that is currently transported by truck would move by rail instead. (*Id.*)

To minimize effects on vehicles, OEA recommends that the Board adopt the mitigation measures the Coalition has volunteered as well as various conditions OEA has crafted itself. The voluntary mitigation measures include a requirement for the Coalition to consult with appropriate federal, tribal, state, and local transportation agencies to determine the final design of the at grade crossing warning devices and to follow standard safety designs for at-grade road crossings, among other measures (VM 2). Additionally, OEA is recommending a mitigation measure that would require the Coalition to consult with private landowners and communities affected by new at-grade crossings to identify measures to mitigate impacts on emergency access and evacuation routes and incorporate the results of this consultation into the emergency response plan identified in VM-11 (VSD-MM-6). OEA is also recommending additional mitigation measures, (VSD-MM-4, VSD-MM-5), requiring the Coalition to support Operation Lifesaver educational programs in communities along the Line to help prevent accidents at highway/rail grade crossings and to adhere to Federal Highway Administration regulations for grade-crossing signage. OEA concludes that, if the recommended mitigation measures in the Final EIS are implemented, impacts from the new vehicles and at-grade road crossings would not significantly affect vehicle safety on public roadways or cause significant delay for people traveling on local roads. (*Id.* at S-10.) The Board adopts OEA's reasonable analysis of impacts concerning vehicle safety and delay and will impose the mitigation recommended in the Final EIS.

7. Rail Operations Safety

Operation of any of the Action Alternatives would involve the risk of rail-related accidents, potentially including collisions, derailments, or spills. (*Id.*) Because the Wells Draw Alternative is the longest of the Action Alternatives, OEA predicts that it would have the highest chance of accidents (0.24 to 0.72 accident per year), followed by the Whitmore Park Alternative (0.22 to 0.60 accident per year) and the Indian Canyon Alternative (0.20 to 0.56 accident per year). (*Id.* at 3.2-7.) Given that approximately one in four accidents involving loaded trains would result in a release of some crude oil, OEA predicts that rail operations under the Wells Draw Alternative would result in a spill approximately once every 11 years (under the high rail traffic scenario) to approximately once every 33 years (under the low rail traffic scenario). (*Id.*) Under the Indian Canyon Alternative, a spill would be expected approximately once every 14 to 40 years, while OEA predicts that the Whitmore Park Alternative would experience a spill approximately once every 13 to 36 years, depending on the volume of rail traffic.⁹ (*Id.* at 3.2-7 to 8.)

To minimize the likelihood and consequences of accidents during rail operations, the Coalition volunteered mitigation (VM-1, VM-15) to ensure that train operators using the Line would comply with the requirements of the Hazardous Materials Transportation Act, as implemented by the U.S. Department of Transportation, and with Federal Railroad Administration safety requirements, including any applicable speed limits and train-lighting requirements. In addition, OEA is recommending a mitigation measure (ROS-MM-2) that would require the Coalition to inspect, as part of its routine rail inspections or at least twice annually, both track geometry and local terrain conditions. Implementation of this measure would minimize the potential for problems with the track or track bed that could lead to accidents (ROS-MM-2). To ensure that the consequences of a potential accident would be minimized, the Coalition also has committed to developing an internal Emergency Response Plan for operations on the Line. The plan would include a roster of agencies and people to contact for specific types of emergencies during rail operations and maintenance activities, procedures to be followed by particular rail employees in the event of a collision or derailment, emergency routes for vehicles, and the location of emergency equipment (VM-8). In addition, the Coalition's voluntary mitigation measure (VM-14) and OEA's recommended mitigation measure (ROS-MM-1), require the Coalition to immediately notify state and local authorities in the event of a release of crude oil and to immediately commence cleanup actions in compliance with federal, state, and local requirements.

Because the operation of rail lines inherently involves the potential for accidents, some impacts related to rail operations safety in the project study area would be unavoidable. OEA concludes, however, that these impacts would be minimized and would not be significant if the

⁹ CBD criticizes the methodologies the Final EIS uses and claims that the Final EIS does not fully disclose its underlying data. However, OEA's analysis methods for assessing impacts related to rail operations safety are widely used and accepted and are consistent with OEA's past practice in railroad construction cases. Agencies are entitled to choose among reasonable methodologies, *Jewell*, 825 F.3d at 584-85, and the EIS fully explains its analysis. (Final EIS Sec. 3.2, App. T-40-41.)

Coalition's voluntary mitigation measures, OEA's recommended mitigation measures, and all applicable federal requirements are implemented. (*Id.* at 3.2-8.) The Board adopts OEA's reasonable analysis of impacts concerning the safety of rail operations and will impose the mitigation recommended in the Final EIS.

8. Air Quality and Greenhouse Gases (GHG)

OEA explains in the Final EIS that during the rail construction phase, construction equipment would emit air pollutants, including criteria air pollutants that could contribute to poor air quality and GHGs that would contribute to climate change. (*Id.* at S-12.) Among the three Action Alternatives, the Wells Draw Alternative would result in the most construction-related air pollution and GHG emissions, followed by the Whitmore Park Alternative and the Indian Canyon Alternative. Emissions from rail construction activities would be temporary and would move continually during the construction period. (*Id.* at 3.7-38.) Construction-related air emissions would not cause concentrations of criteria air pollutants to exceed the National Ambient Air Quality Standards (NAAQS)¹⁰ and would not exceed the de minimis thresholds for air emissions within the Uinta Basin Ozone Nonattainment Area. (*Id.* at S-12.) With implementation of the Coalition's voluntary mitigation measure and OEA's recommended mitigation measures, OEA concludes that impacts related to air quality and GHG emissions would not be significant. (*Id.* at 3.7-38.)

The State responded to the Final EIS, asking that OEA remove AQ-MM-4, a condition requiring biodiesel fuel to be used during rail construction, and AQ-MM-8, a condition requiring the use of renewable diesel fuel during rail construction. (State Comment 2, Sept. 27, 2021.) The State notes that it already has a Utah Clean Diesel Program and that OEA's recommended measures would pose a regulatory burden. (*Id.*) The Board disagrees with the State's opinion that requiring the Coalition to use alternatives to traditional diesel fuel during construction in order to reduce GHG emissions would pose an undue regulatory burden. Therefore, the Board will not remove these conditions but will further clarify them in the Board Mitigation section below. Similarly, the State asks that AQ-MM-9 be removed to encourage voluntary ozone-reduction activities in coordination with the Utah Department of Environmental Quality. (*Id.*) That condition requires, to the extent practicable, that the Coalition avoid conducting project-related construction activities that could result in the emission of ozone precursors within the Uinta Basin Ozone Nonattainment Area in January and February to minimize emissions of ozone. The Board will not remove this condition but, in response to the Coalition's concerns, will modify it to explain that if the Coalition cannot avoid such construction during January and

¹⁰ Under the Clean Air Act, USEPA sets air quality standards for six principal pollutants which can be harmful to public health and the environment. USEPA designates areas where criteria air pollutant levels are less than the NAAQS as "attainment" areas and where pollutant levels exceed the NAAQS as "nonattainment" areas. USEPA designates former nonattainment areas that have attained the NAAQS as "maintenance" areas. USEPA has designated the Basin as an attainment area for all pollutants except ozone because measured concentrations of ozone in the eastern part of the Basin have exceeded the NAAQS in winter when the ground is covered by snow and stagnant atmospheric conditions are present (ozone levels at other times have been less than the NAAQS). (*See* Final EIS 3.7-8.)

February, it must consult with OEA and the Utah Department of Environmental Quality's Air Quality Division to identify and implement other appropriate ozone-reduction activities for those months.¹¹

OEA also examined projected air emissions from rail operations over the Line and finds in the Final EIS that the primary source of emissions would be locomotives. (Final EIS 3.7-38.) Because it is the longest Action Alternative, the Wells Draw Alternative would result in the most emissions of all pollutants, followed by the Whitmore Park Alternative and then the Indian Canyon Alternative. (*Id.*) Based on the air quality modeling, OEA concludes that operation of the Line would not cause air pollutant concentrations to exceed the NAAQS at any location. (*Id.*) Therefore, OEA finds that operation of the Line would not result in significant air quality impacts. (*Id.* at 3.7-39.)

OEA recommends mitigation measures related to GHG emissions, but, as the Final EIS explains, operation of the Line would still result in unavoidable GHG emissions even if these measures are implemented. (*Id.*)¹² However, GHG emissions from rail operations would represent a small percentage (less than one percent) of existing statewide GHG emissions in Utah, (Final EIS Table 3.7-1), and would not contribute significantly to global climate change, (*id.* at 3.7-39).

USEPA's comments on the Final EIS discuss several technical issues related to a computer model that OEA used to predict the dispersion of air pollutants from locomotive emissions along the Line. Those issues, however, also were raised in USEPA's comments on the Draft EIS, and OEA, in response, made changes to its analysis in the Final EIS. (Final EIS App. M (Air Quality Emissions and Modeling Data); App. T-251.) USEPA also expresses concern that OEA's use of a "flagpole height" (i.e., the height above the ground for which the model predicts the concentration of a pollutant) for one of the modeling scenarios described in the Final EIS might under-predict air pollutant concentrations for that modeling scenario. After receiving USEPA's letter, OEA reran the model scenario without using a flagpole height, as USEPA had recommended, and found the new results to be identical to the results reported in the Final EIS. Therefore, no further air quality modeling is necessary to support OEA's conclusions,

¹¹ CBD states that OEA should use the most recent global warming potential (GWP) values in calculating GHG emissions from the Line and other projects in the area. (CBD Comment 37, Oct. 18, 2021.) OEA appropriately used the GWP values from the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report from 2007, consistent with international GHG reporting standards under the United Nations Framework Convention on Climate Change.

¹² CBD states that the Board should require the railroad to achieve net-zero emissions, including emissions from oil and gas production in the Basin and downstream uses of oil transported on the rail line. (CBD Comment 44-45, Oct. 18, 2021.) This would be an unprecedented mitigation that is not mandated by any federal or applicable state regulatory requirement and would likely be impossible to implement as proposed.

and the Board agrees with OEA's determination that the Line would not significantly affect air quality in the project area.¹³

9. Increased Oil and Gas Drilling and Other Cumulative Impacts

Under NEPA, agencies must analyze direct, indirect, and cumulative impacts. 40 C.F.R. §§ 1502.16, 1508.7, 1508.8, 1508.25 (as applicable in 2019). To do that, OEA reviewed information on relevant past, present, and reasonably foreseeable projects and actions that could have impacts that coincide in time and location with the potential impacts of the proposed rail line. (Final EIS S-13.) OEA identified 27 relevant projects, including facility and infrastructure improvements, watershed improvements, road improvements, two interstate electric power transmission projects, one crude oil processing facility, one Programmatic Agreement for cultural resource preservation, projects on Forest Service lands, and projects on BLM-administered lands. (*Id.*) Based on the cumulative impacts analysis, OEA concludes that the impacts of those projects in combination with the impacts of construction and operation of the Line could result in cumulative adverse impacts on water resources, biological resources, paleontological resources, land use and recreation, visual resources, and socioeconomics. (*Id.*)

Apart from these 27 projects, OEA's cumulative impacts assessment also includes an analysis of potential future oil and gas development in the Basin and the potential future construction and operation of new rail terminal facilities near Myton and Leland Bench, Utah. (*Id.*) Although OEA expected that the Line would divert to rail transportation some oil that in the past has been trucked to terminals outside the Basin, OEA assumed, for purposes of the cumulative-impacts analysis, that all oil transported on the Line would come from new production. (*Id.* at 3.15-4.) For the analysis of potential cumulative impacts, OEA developed two potential scenarios for future oil and gas development in the Basin that correspond to the Coalition's estimated range of rail traffic. (*Id.* at 3.15-3.) Under the high oil production scenario, total oil production in the Basin would increase by an average of 350,000 barrels per day and result in 3,330 wells over the first 15 years. (*Id.* at 3.15-4 to 6.)

As explained in the Final EIS, construction and operation of any of the Action Alternatives would, along with oil and gas development activities in the Basin, contribute to increased vehicle trips in the cumulative impacts study area that could increase the potential for vehicle safety and delay impacts. (*Id.* at 3.15-10.) Under the high oil production scenario, traffic would increase by a maximum of 6% on the major roadways, leaving substantial remaining capacity. (*Id.* at 3.15-13.) Local roads, however, have smaller roadway capacity, and OEA concludes that the increase in traffic on local roads used to serve the terminals could result in

¹³ As part of its further claim that OEA's analysis of climate change is insufficient, CBD lists multiple methods that it asserts OEA should have used in its analysis of climate change, such as social cost of carbon, carbon budgeting, and carbon "lock-in." (CBD Comment 37-42, Oct. 18, 2021.) Use of these methodologies, however, is not required under NEPA or its implementing regulations, and the existence of alternative tools for analysis does not support a conclusion that the methodologies used in the EIS were insufficient. (Final EIS, App. T-280, T-283, T-430-31); see also Jewell, 825 F.3d at 584-85 (agencies are entitled to choose among reasonable methodologies).

significant cumulative impacts on vehicle delay in the absence of road improvements or other mitigation. (Id.)

Additionally, OEA concludes that vehicle traffic stemming from increased oil and gas development would not result in significant cumulative impacts on vehicle safety. (Id. at 3.15-15.) OEA notes, among other things, that vehicle safety in the study area is generally good and that crash rates in Uintah and Duchesne Counties, where most oil and gas activity is occurring, are below the national average. (Id.)

As to air quality and climate change, OEA assumed that total air pollutant emissions each year would vary according to the number of wells constructed in that year. (Id. at 3.15-33.) Once a well is producing, emissions occur from operations and maintenance activities, which generate truck trips to the well site, and from trucks that transport the crude oil to the rail terminals. Emissions also occur from venting, flaring, equipment leaks, and engine exhaust from equipment located at operating wells. (Id. at 3.15-34.) OEA estimated aggregate emissions from potential future oil and gas development based on the best available information regarding emissions from oil and gas production in the Basin. (Id. at Table 3.15-11.) However, OEA determined the specific locations of localized air quality impacts in the cumulative impacts study area are not known because there are no available data on the characteristics or local site conditions of potential future oil and gas development projects. (Id. at 3.15-33.)

OEA adds that refiners would refine the crude oil transported by the Line into various fuels and other products. To the extent that the crude oil would be refined into fuels that would be combusted to produce energy, emissions from the combustion of the fuels would produce GHG emissions that would contribute to global warming and climate change. (Id. at 3.15-35.) Downstream end use emissions associated with the combustion of the crude oil that could be transported on the Line under the high oil production scenario could represent up to approximately 0.8% of nationwide GHG emissions and 0.1% of global GHG emissions. (Id. at 3.15-36.) However, the actual volumes of crude oil that would move over the Line would depend on various independent variables and influences, including general domestic and global economic conditions, commodity pricing, the strategic and capital investment decisions of oil producers, and future market demand for crude oil from the Basin, which would be determined by global crude oil prices and capacity at oil refineries, among other factors. (Id. at 3.15-3.) Furthermore, to the extent that crude oil transported on the Line could be refined into products other than fuel and, to the extent that the fuels produced from crude oil transported on the Line could displace other fuels from the market, GHG emissions from downstream end uses would be lower, and potentially significantly lower, than these estimates.

OEA also reasonably explains that benefits would result from the increase in annual oil production. Notably, increased production would generate long-term employment, labor income, and spending on goods and services in the cumulative impacts study area.¹⁴ Increased production would also generate state and local revenue through taxes. Additionally, new wells

¹⁴ Constructing and operating any of the Action Alternatives would also generate direct, indirect, and induced employment, including for tribal members, and create state and local revenue. (Id. at 3.13-26 to 33.)

drilled on state land or accessing state minerals would generate additional revenue for Utah through royalties and lease payments. (*Id.* at 3.15-51.)

CBD asserts that the Final EIS is insufficient because it fails to treat a potential future increase in oil and gas production in the Basin and downstream emissions from the end uses of oil transported on the Line as indirect impacts of the project. And, as a result, CBD argues that the Final EIS does not sufficiently disclose the impacts of increased oil and gas production in the Basin that could occur as a result of the Line. (CBD Comment 8-14, Oct. 18, 2021.)

Indirect effects are reasonably foreseeable effects that are caused by the action but that are later in time or farther removed in distance. 40 C.F.R. § 1508.8. An indirect effect is more than something that could not occur “but for” the federal action at issue and, instead, to be an indirect effect of an action under NEPA requires a reasonably close causal connection. Dep’t of Transp. v. Pub. Citizen, 541 U.S. 752, 767-68, 770-72 (2004); see also Metro. Edison Co. v. People Against Nuclear Energy, 460 U.S. 766, 774 (1983). Thus, when an agency “has no ability to prevent a certain effect due to its limited statutory authority over the relevant actions, the agency cannot be considered a legally relevant ‘cause’ of the effect” for NEPA purposes. Dep’t of Transp. v. Pub. Citizen, 541 U.S. at 770. Here, the Board has no authority or jurisdiction over development of oil and gas in the Basin nor any authority to control or mitigate the impacts of any such development. Accordingly, contrary to CBD’s argument, the fact that this oil and gas development likely would not occur “but for” the Board granting authority to construct and operate the Line does not make this an indirect effect. OEA properly declined to treat oil and gas development as an indirect effect.

This does not mean that OEA did not consider effects of potential oil and gas development in the Basin. Rather, OEA determined that impacts from potential oil and gas development should be considered as a cumulative impact and conducted a full and appropriate analysis of those impacts. (Final EIS Sec. 3.15.4.1.) Cumulative impacts are those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. 40 C.F.R. § 1508.7. Oil and gas development that may occur following authorization of the Line would entail many separate and independent projects that have not yet been proposed or planned and that could occur on private, state, tribal, or federal land and could range in scale from a single vertical oil well to a large lease involving many horizontal wells.¹⁵ As a result, the Board agrees with OEA that this development was properly considered as a cumulative impact.¹⁶

¹⁵ Furthermore, regardless of whether the EIS labeled the impacts from oil and gas development in the Basin as indirect or cumulative impacts, OEA conducted a full analysis of those effects. The impacts and the analysis of those impacts would be the same no matter which label is used.

¹⁶ CBD levels several additional criticisms of OEA’s analysis of potential oil and gas development in the Basin, including claims of inconsistent statements and conclusions. But the Board will not directly address those here because a fair reading of the Final EIS shows that they are based on mischaracterizations of the statements in the Final EIS that CBD relies on and the thorough analysis OEA conducted. (See CBD Comment 10-13, Oct. 18, 2021; Final EIS Sec. 3.15.4.1.)

CBD asserts that OEA erred in relying, in part, on the results of an EIS prepared by the BLM for the Monument Butte Oil and Gas Development Project to predict potential air emissions that could result from future oil and gas production in the Basin as part of OEA's cumulative impacts analysis.¹⁷ (CBD Comment 3-4, 26-36, Oct. 18, 2021.) The Monument Butte EIS was a study of a proposed oil development project in the Basin and OEA relied, in part, on the results of that study to make conclusions about the cumulative air quality impacts of potential future oil and gas production in the Basin when considered in combination with the potential air quality impacts that could result from construction and operation of the Line. (Final EIS 3.15-32.) OEA's use of the results of the Monument Butte EIS in the cumulative impacts analysis was reasonable and appropriate because the Monument Butte EIS provides the best available information regarding potential air emissions from oil and gas production projects in the Basin. (Final EIS App. T-266, T-401-407.)

10. Downline Impacts

As part of its analysis of impacts, OEA examined downline impacts of the project, i.e., reasonably foreseeable impacts that could occur outside the project area as a result of construction and/or operation of trains using the Line. (See Final EIS, Sec. 3.1 (Vehicle Safety and Delay), Sec. 3.2 (Rail Operations Safety), Sec. 3.6 (Noise and Vibration), Sec. 3.7 (Air Quality and Greenhouse Gases).) The Board's regulations at 49 C.F.R. § 1105.7(e)(11)(v) governing review of potential downline impacts refer to the general thresholds for environmental review concerning air quality and noise. 49 C.F.R. §§ 1105.7(e)(5); 1105.7(e)(6). Consistent with prior practice and based on its experience, OEA determined that these regulatory thresholds should also apply to the analysis of downline impacts on freight rail safety and grade-crossing safety and delay in the EIS here. See Tongue River R.R.—Constr. & Operation—in Custer, Powder River, & Rosebud Cntys., Mont., FD 30186, Draft EIS at Sec.17.1 (STB served Apr. 17, 2015). That approach is reasonable, as the rationale for finding that minimal increases in train traffic on existing rail lines over which trains already operate are unlikely to cause significant impacts on air quality and, furthermore, that noise applies equally to potential effects on rail safety and grade-crossing safety and delay.

There are many different potential destinations for Uinta Basin oil transported by train and even more practical routes available to reach those destinations. Because it is not possible to identify specific refineries that would receive shipments of Uinta crude oil, in order to assess downline impacts, OEA first identified potential refinery destinations for Uinta crude oil using a regional approach. (See Final EIS App. C.) After those regions were identified, OEA then considered potential routing to those destinations and where the estimated project-related rail traffic would exceed the Board's regulatory thresholds. (*Id.*) Using the predicted number and length of trains, OEA's analysis of likely regional destinations, and the projected reasonably

¹⁷ CBD also asserts that the EIS fails to properly account for Clean Air Act requirements for Uinta Basin as a nonattainment area. (CBD Comment 33-35, Oct. 18, 2021.) The record contradicts CBD's claim that the EIS failed to consider those impacts or comprehensively explain how it came to conclusions regarding the same. (See Final EIS Sec. 3.7.1.1; 3.15.5.7; App. M; App. T-268-69, T-271-76, T-401-02.)

foreseeable routes for this traffic, OEA identified a downline impact study area eastward from Kyune to the northern, southern, and eastern edges of the Denver Metro/North Front Range that met the Board's regulatory thresholds for analysis and assessed impacts in that downline study area. (*Id.*) Using its analysis of predicted destinations, OEA further concluded that rail traffic outside of the downline study area would be dispersed and that no individual rail lines outside of the downline study area can reasonably be expected to experience an increase in rail traffic in excess of OEA's analysis thresholds. Therefore, the Final EIS concludes that an analysis of downline impacts on existing rail lines outside of the downline study area would not be appropriate.

CBD objects to both the application of the Board's regulatory thresholds to rail safety and delay, environmental justice, and GHG emissions from refining Uinta crude oil, as well as the validity of the thresholds themselves. According to CBD, the Board's thresholds prevent analysis of reasonably foreseeable impacts. (CBD Comment 14-18, Oct. 18, 2021.) As noted above, the regulatory thresholds place reasonable limits on OEA's assessment of certain impacts because minimal increases in train traffic on existing rail lines already in use are not likely to result in significant additional impacts required to be analyzed under NEPA. And indeed, CBD points to nothing that would indicate that the downline impacts here would be significant but instead relies on speculation. (*Id.*)

NEPA does not require agencies to examine every possibility that an impact could occur no matter how speculative, nor does it require agencies to analyze the impacts of effects over which it has no control because evaluation of those impacts would not inform the agency's decision-making. See *Dep't of Transp. v. Pub. Citizen*, 541 U.S. at 768-70; *Jewell*, 825 F.3d at 583 (agencies are entitled to make reasonable inferences based upon the data); *Andrus*, 619 F.2d at 1375-76 (discussion of environmental effects must be governed by "rule of reason" and NEPA does not require every action to be discussed in exhaustive detail). Because the Board cannot regulate downline train operations by other carriers as part of this proceeding, it cannot regulate or mitigate impacts caused by those downline operations. The type of analysis that CBD claims is necessary is therefore neither required nor useful. As a result, OEA's application of the thresholds here was appropriate, reasonable, and consistent with NEPA and the regional analysis of downline rail operations complies with NEPA.

CBD also asserts that OEA should have included in its downline analysis impacts from operation of trains carrying Uinta crude oil on the Tennessee Pass Line. (CBD Comment 18-19, Oct. 18, 2021.) The Tennessee Pass Line is a line of railroad in Colorado that is owned by UP and has been out of service for many years. See *Colo., Midland & Pac. Ry.—Lease & Operation Exemption Containing Interchange Commitment—Union Pac. R.R.*, FD 36471, slip op. at 1, 4-5 (STB served Mar. 25, 2021). As discussed in the Board's *September 30 Decision*, even if it were in service, the Tennessee Pass Line would be unlikely to carry Uinta crude oil. *September 30 Decision*, FD 36284, slip op. at 6. Among other things, the Board noted that the modeling program used by OEA to examine the patterns for traffic coming off the Line did not forecast any traffic travelling over the Tennessee Pass Line. (Final EIS, App. C, C-4, C-6.) Instead, OEA projects that "all rail traffic moving from Kyune to destinations in the east would travel

over the existing rail line between Kyune and Denver, Colorado.” (*Id.* at C-4.)¹⁸ Thus, the Board agrees with OEA that analysis of impacts from use of the Tennessee Pass Line is not reasonably foreseeable and, therefore, not appropriate for consideration in the EIS.

11. Tribal Concerns

OEA coordinated and consulted with tribes in accordance with NEPA, Executive Order 13175, and Section 106 of the National Historic Preservation Act (NHPA). (Final EIS 5-7.) Through government-to-government consultation with the Ute Indian Tribe,¹⁹ OEA identified impacts related to vehicle safety and delay, rail operations safety, biological resources, air emissions, and cultural resources as areas of concern for the tribe. (*Id.* at S-9.) To mitigate the impacts, OEA has crafted mitigation measures that require the Coalition to work with the Ute Indian Tribe to address issues of tribal concern. In particular, OEA worked with the Ute Indian Tribe and other Section 106 consulting parties to develop a Programmatic Agreement, which has been executed, that sets forth how cultural resources would be protected if the Board were to authorize the Line. (*Id.* at S-9 to 10.) In addition, OEA has identified impacts on the Pariette cactus and the Uinta Basin hookless cactus as disproportionately high and adverse impacts on an environmental justice community. Because those species are culturally important to the Ute Indian Tribe, OEA is recommending mitigation requiring the Coalition to consult with the Ute Indian Tribe regarding impacts on those special status plant species and to abide by the tribe’s requirements for addressing the impacts. (*Id.* at S-10.)

NHPA

In accordance with Section 106 of NHPA, OEA surveyed the project area, identified historic properties, and consulted with interested parties regarding the potential effects of the project on these properties. Construction of the proposed rail line would physically alter and potentially destroy cultural resources located within the below-ground portion of the area of potential effects (APE) (the project footprint plus a 50-foot buffer). (*Id.* at 3.9-13.) The APE for the Indian Canyon Alternative includes 16 known historic properties, the APE for the Wells Draw Alternative includes 19 known historic properties, and the APE for the Whitmore Park Alternative includes 16 known historic properties. (*Id.* at 3.9-13 to 16.) Some of these resources could be altered or destroyed during construction of the Line. (*Id.*)

Because the APEs have not been surveyed comprehensively, OEA concludes that additional cultural resources, such as previously unidentified archeological sites, are likely to be present in the APEs and could be impacted by construction and operation of the proposed rail line. (*Id.* at 3.9-17.) To ensure that any adverse effects on historic and cultural resources are

¹⁸ The Coalition provided additional support for OEA’s independent analysis by submitting a verified statement from Rio Grande Pacific Corporation, the proposed operator of the Line, stating that it has no intention of routing trains originating on the Line over the Tennessee Pass Line and that using the Tennessee Pass Line to transport crude oil would be impractical and the highest-cost option. (Coal. Reply, V.S. Hemphill 2, Jan. 26, 2021.)

¹⁹ As noted earlier, the Ute Indian Tribe filed a letter on October 1, 2021, in support of the project.

appropriately avoided, minimized, or mitigated, OEA recommends that the Coalition be required to comply with the terms of the executed Programmatic Agreement discussed above. (VM-42, VM-43). The Board adopts OEA's thorough and reasonable analysis under NHPA and will impose the recommended mitigation requiring the Coalition to comply with the Programmatic Agreement.

Environmentally Preferable Alternative

Based on OEA's analysis and consultation with appropriate government agencies, the Ute Indian Tribe, other interested stakeholders, and the public, OEA concludes that, among the three Action Alternatives, the Whitmore Park Alternative would result in the fewest significant impacts on the environment. (Final EIS S-13.) In particular, the Whitmore Park Alternative would permanently affect the smallest area of water resources, including wetlands and perennial streams; would minimize impacts on greater sage-grouse leks and associated summer brood rearing habitat, as discussed above; and avoid impacts on subdivided residential areas. (*Id.*)

The Final EIS explains that, compared to the Wells Draw Alternative, the Whitmore Park Alternative would permanently and temporarily affect a smaller area of wetlands and intermittent streams, as well as a smaller number of springs. (*Id.*) It would avoid impacts on special use areas on BLM-administered lands, including Areas of Critical Environmental Concern, Lands with Wilderness Characteristics, and areas classified by BLM as sensitive to visual impacts. The Whitmore Park Alternative also would affect a smaller area of suitable habitat for the Pariette cactus and Uinta Basin hookless cactus than the Wells Draw Alternative and would avoid potential impacts on moderately suitable habitat for the threatened Mexican spotted owl and a smaller area of big game habitat. (*Id.*) In addition, it would result in fewer total emissions of criteria air pollutants and GHGs during construction and rail operations; would cross a smaller area of land that may be prone to landslides; would displace fewer residences; would involve a lower risk for accidents at at-grade road crossings; and would cross a smaller area with high potential for wildfires. (*Id.*)

Compared to the Indian Canyon Alternative, the Whitmore Park Alternative would permanently and temporarily affect a smaller area of wetlands, a smaller area of riparian habitat, and a smaller number of springs and would also require fewer stream realignments. (*Id.* at S-14.) It would avoid noise impacts on residences during rail operations, as well as visual and other impacts on residential areas in the Argyle Canyon and Duchesne Mini-Ranches areas of Duchesne County. (*Id.*) The Whitmore Park Alternative would generate more employment, labor income, and local and state tax revenue during construction than the Indian Canyon Alternative and would cross a smaller area of geological units that may be prone to landslides and a smaller area of land with high wildfire hazard potential. (*Id.*) For these reasons, OEA recommends that the Board authorize the Whitmore Park Alternative if it grants final approval to the Line. (*Id.*) For the reasons discussed above and in the Draft and Final EIS, the Whitmore Park Alternative is the alternative the Board approves.

Board Conclusions on Environmental Analysis

Upon consideration of the Draft EIS, the environmental comments submitted to the Board, and the Final EIS, the Board is satisfied that the Draft and Final EIS have taken the requisite “hard look” at the potential environmental impacts associated with this transaction. The Draft and Final EIS adequately identify and assess the environmental impacts discovered during the course of the environmental review, carefully consider a reasonable range of alternatives (including a No Action Alternative), and include extensive environmental mitigation to avoid or minimize potential environmental impacts. Accordingly, the Board adopts the Draft and Final EIS and all of OEA’s analysis and conclusions, including those not specifically addressed here. The Board finds that OEA’s recommended Environmentally Preferable Alternative (Whitmore Park Alternative) best satisfies the purpose and need for the Line, while minimizing potential impacts to residential areas, water resources, and greater sage-grouse leks and associated summer brood rearing habitat.

Board Mitigation

The Draft and Final EIS demonstrate that construction of the Whitmore Park Alternative would result in impacts on the environment, including impacts not discussed in this decision. However, the mitigation measures voluntarily proposed by the Coalition along with the mitigation developed by OEA during its environmental review should minimize the potential environmental effects of the transaction to the extent practicable. The Board will therefore impose the voluntary mitigation measures developed by the Coalition and, except as discussed above, all of the additional mitigation measures recommended by OEA. In addition to the impacts discussed above, the mitigation measures appropriately address a number of other environmental issues assessed in the Draft and Final EIS, including impacts concerning water resources, wayside noise, and hazardous materials. The Board will also adopt the changes to mitigation measures concerning air quality and the greater sage-grouse following issuance of the Final EIS, which are discussed above, as well as modify a condition in the Final EIS concerning big game migration routes, BIO-MM-19.²⁰ The Coalition will also be required to comply with the executed Programmatic Agreement developed to address potential adverse impacts to cultural resources.

Weighing Environmental Impacts and Transportation Merits and Considering Appropriateness of an Exemption

The Board recognizes that, as with most other rail construction projects, the construction and operation of this Line is likely to produce unavoidable environmental impacts. But the Board also finds that the construction and operation of the Environmentally Preferred Whitmore Park Alternative, with the extensive mitigation conditions imposed, will minimize those impacts

²⁰ Specifically, in light of concerns by CBD, (see CBD Comment 58-62, Oct. 18, 2021), the Board will amend the condition to require the big game corridor crossing plan to evaluate the use of big game overpasses or underpasses (including standards for design), wildlife friendly fencing, reduced train speeds in high-risk areas, use of sound signaling, and barriers in collision hotspots.

to the extent practicable. And the construction and operation of this Line will have substantial transportation and economic benefits. As noted above, the Line will bring rail service to an area of Utah that does not currently have service, provide shippers that must now rely on trucks another shipping option, and create jobs. (See, e.g., Congressional Letter 1, June 28, 2021.) Rail service will eliminate longstanding transportation constraints. The availability of a more cost-effective rail transportation option could also support the diversification of local economies in the Basin, which could support additional employment and expand the regional economy. (See Governor Cox & Lieutenant Governor Henderson Letter 1, Aug. 30, 2021.) Moreover, the Board notes the Ute Indian Tribe's support of the project and the benefits that the Tribe has stated that it will provide. While the No-Action Alternative would avoid the potential environmental impacts of the rail project, it would not bring these benefits to the Basin or meet the goals of the counties making up the Coalition or the Ute Indian Tribe. The environmental impacts identified in the Draft and Final EIS have been sufficiently mitigated so that they do not outweigh the Line's transportation benefits. Moreover, as explained in the Board's January 5 Decision (slip op. at 5-6), the Board can grant the Coalition's request for authority even if all issues involving financing are not yet resolved because the grant of authority is permissive, not mandatory, and the ultimate decision on whether to proceed will be in the hands of the Coalition and the marketplace, not the Board.²¹ A grant of authority permits a new line to be built if the necessary financing is obtained. Without moving forward with the process needed to obtain Board authority, however, no new rail lines could be built, regardless of how viable the projects might be.

Concerning the appropriateness of an exemption, one would further the RTP goals at § 10101 (2), (4), (5), and (7). As noted above, however, Argyle claims that the RTP goals at § 10101(8), concerning public safety, and § 10101(11), concerning safe working conditions, would be undermined by the project. (Argyle Reply 9, July 7, 2020.) Argyle asserts that there will be a substantial increase in local truck traffic if oil production were to increase to the extent claimed by the Coalition. (*Id.* at 10.) Argyle also claims, among other things, that rail activities could trigger forest fires and notes that Argyle Canyon was heavily damaged by a fire in 2012. (*Id.*) Similarly, CBD argues that the project's many significant environmental impacts, the undefined nature of certain mitigation measures proposed in the EIS and BO, and questions about the project's financial viability require more extensive proceedings to determine whether the project is financially able to avoid and/or mitigate the project's environmental effects and operate without detriment to the public health and safety. (CBD Comment 6, Oct. 18, 2021.)

These concerns do not warrant denying the petition for exemption. The Board properly considered the statutory standards that govern exemption requests in the January 5 Decision and the September 30 Decision. The record developed in this proceeding is substantial, and additional regulatory processes would not likely add to the substance of what has been presented. OEA has demonstrated in its Final EIS that there only would be a small risk of forest fire based on various factors such as the geography crossed by the Whitmore Park Alternative and that any

²¹ The Board notes that the Coalition has stated its "plans for financing the project through a private partner" and that "the project will be privately financed." (Coal. Reply 12-13, July 21, 2020.)

harm would be lessened by the extensive mitigation measures the Board imposes here. Similarly, truck traffic would not significantly increase on major roads as a result of construction and operation of the Line and problems on local roads would be lessened by the mitigation measures the Board will impose. As for CBD's concerns regarding the mitigation, these were previously raised in CBD's comments on the Draft EIS and were appropriately addressed by OEA in the Final EIS. Further, the Board is modifying a number of the mitigation measures that CBD and the State identified as unclear or inadequately defined. The Board need not revisit the financial concerns CBD raises as the Board already discussed those issues in its January 5 Decision.

In sum, the transportation merits of the project outweigh the environmental impacts and the Coalition has demonstrated that an exemption from § 10901 is appropriate. There also is a presumption that rail construction projects are in the public interest. Section 10901(c) provides that the Board "shall issue a certificate [authorizing construction activities] [...] unless the Board finds that such activities are inconsistent with the public convenience and necessity." Recognizing the presumption, the Board finds that this project should be approved.

CONCLUSIONS

The Board is satisfied that the Whitmore Park Alternative will meet the transportation goals of the project. Accordingly, the Board reaffirms here the analysis it discussed in the January 5 Decision.

After weighing the transportation merits and environmental impacts and considering the entire record, the Board finds that the Coalition's petition for exemption under § 10502 from the prior approval requirements of § 10901 should be granted. The Board is granting final approval of the construction and operation of the Environmentally Preferable Alternative—Whitmore Park Alternative—subject to compliance with the environmental mitigation measures listed in Appendix B of this decision.

It is ordered:

1. The filings commenting on the Final EIS are accepted into the record.
2. Under 49 U.S.C. § 10502, the Board exempts the Coalition's construction and operation of the above-described rail line from the prior approval requirements of 49 U.S.C. § 10901.
3. The Board adopts the environmental mitigation measures set forth in Appendix B to this decision and imposes them as conditions to the exemption granted here.
4. Notice will be published in the Federal Register.
5. Petitions for reconsideration must be filed by January 4, 2022.

6. This decision is effective on January 14, 2022.

By the Board, Board Members Begeman, Fuchs, Oberman, Primus, and Schultz. Board Member Oberman dissented with a separate expression.

BOARD MEMBER OBERMAN, dissenting.

I respectfully dissent from today's decision (Today's Decision) granting the Coalition's petition for exemption. The project's environmental impacts outweigh its transportation merits, and I would accordingly deny the Coalition authority to construct the Line.

As an initial matter, as I explained in my dissent to the January 5 Decision, the Board should not have utilized a so-called two-step process and granted preliminary approval of the transportation merits before completion of the environmental review. In addition, the Board should have required the Coalition to submit additional information before concluding that an application under 49 U.S.C. § 10901 was not necessary. I raised grave concerns then regarding the Line's financial viability given the increasingly uncertain global market for crude oil, and the likelihood that it would be the public—and not private investors—who would bear the cost of constructing an ultimately unprofitable rail project. These concerns have grown over the last year, as the world economy has accelerated its transition away from use of the internal combustion engine and corresponding need for crude oil. Ever increasing doubt about the future market for oil undermines the project's transportation merits and counsels against an exemption.

But now that the environmental review has been completed, I have concluded not only that the financial viability of the Line is in serious doubt but also that the Line's environmental impacts significantly outweigh its transportation merits. In my view, it should be underscored that the Board has the power to deny construction approval based on weighing all of the environmental impacts that will arise from oil and gas development in the Basin, and the Board should consider those impacts as the reasonably foreseeable, indirect effects that they are, especially since the "entire purpose" of this Line is to stimulate and support oil production in the Basin. Assessing these impacts solely within a cumulative impact analysis, as Today's Decision does, badly understates their significance, and in particular the significance of downstream greenhouse gas emissions that will result from the combustion of oil moved over the Line. The critical question presented in this proceeding is whether the Line would serve the public interest given its centrality to oil development in the Basin and the broader and dire global warming crisis, *as well as* the very serious, significant, and unavoidable environmental impacts that Today's Decision *does* in fact attribute to the project.

Absent some particularized national need for increased oil from the Basin, of which there is none, I cannot support construction of the Line.

Transportation Merits

As noted in my dissent to the January 5 Decision, it is beyond controversy that the project's financial success depends entirely upon increased oil production in the Uinta Basin. January 5 Decision, FD 36284, slip op. at 14 (Board Member Oberman dissenting). But yet,

questions abound regarding the “future global demand for oil,” as well as the “quantity of oil reserves in the Basin, the demand for the specific type of oil found there, and whether there are sufficient proven reserves to provide long term business for the proposed railroad.” Id. at 16, 17.

Although the price of oil has rebounded since the January 5 Decision, it remains volatile. Moreover, since that time, government and business leaders have advanced new commitments and policies to achieve carbon neutrality in the coming years, with diminished use of the internal combustion engine—and resulting oil consumption—playing a significant role. At the federal level, the United States has rejoined the Paris Agreement and the Biden Administration has set a goal of achieving net-zero emissions economy-wide by 2050. See Tackling the Climate Crisis at Home and Abroad, Exec. Order No. 14008, 86 Fed. Reg. 7619 (Jan. 27, 2021). The President has even more recently called for 50% of all new passenger cars and light trucks sold in the United States to be zero-emission by 2030 and, to help achieve this goal, has directed the Environmental Protection Agency and Department of Transportation to develop new emission and fuel efficiency standards.¹ Strengthening Am. Leadership in Clean Cars & Trucks, Exec. Order 14037, 86 Fed. Reg. 43583 (Aug. 5, 2021). Critically, Congress recently passed the Infrastructure Investment and Jobs Act, which, among other things, provides \$7.5 billion for electric vehicle charging stations, \$5.75 billion for the replacement of public transit vehicles with zero emission vehicles, and establishes a carbon reduction program at the Department of Transportation. See Pub. L. 117-58 (2021).²

States as well have passed new legislation meant to curb oil consumption and have continued to award grants for, or have otherwise initiated, green infrastructure projects, including to support vehicle electrification. See, e.g., Act of Mar. 18, 2021, ch. 263, 2021 Va. Legis. Serv. (H.B. 1965) (West) (codified at Va. Code Ann. §§ 10.1-1307 & 10.1-1307.04) (establishing low-emissions and zero-emissions vehicle program for motor vehicles, consistent with California standards, with a model year of 2025 or later); Washington Climate Commitment Act, ch. 316, 2021 Wash. Sess. Laws 2606 (creating, among other things, greenhouse gas cap-and-invest program that includes declining limits on major emission sources); Press Release, Cal. Energy Comm’n, California Announces \$17.5 million for Public Electric Vehicle Charging in 13 Rural Counties (May 17, 2021) (advancing September 2020 executive order requiring sales of all new passenger vehicles in California to be zero-emission by 2035).³ Such action has not been limited

¹ See also Executive Order on Catalyzing Clean Energy Industries and Jobs through Federal Sustainability, Exec. Order 14057, 86 Fed. Reg. 70935 (Dec. 8, 2021) (directing executive agencies to achieve 100% zero-emission vehicle acquisitions by 2035).

² On November 19, 2021, the House of Representatives passed the Build Back Better Act, which among other things, raises the electric vehicle tax credit to \$12,500 and provides tens of billions of dollars for electric vehicle infrastructure and the replacement of heavy-duty vehicles with zero emissions vehicles. See H.R. 5376, 117th Cong. (2021).

³ Available at: <https://www.energy.ca.gov/newsroom/news-releases>. This builds on the California Public Utilities Commission’s (CPUC) prior approval of a \$437 million electric vehicle charging program to be implemented by Southern California Edison. See Press Release, CPUC, CPUC Expands SCE Charge Ready 2 Transportation Electrification Program (Aug. 27, 2020), <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M345/K822/345822512.PDF>.

to the United States. For example, the European Commission in July proposed expanding the EU's emissions trading scheme, strengthening vehicle emissions standards, including by requiring that all new cars be zero emission by 2035, and introducing a carbon price on imports. Press Release, European Commission, European Green Deal: Commission Proposes Transformation of EU Economy and Society to Meet Climate Ambitions (July 16, 2021).⁴ And, on May 26, 2021, a Dutch court stunningly ordered Royal Dutch Shell (Shell) to reduce its carbon dioxide emissions, arising both from its business operations and sold energy-carrying products, by net 45% by the end of 2030, relative to 2019 levels. Rb. Hague 26 mei 2021, ECLI:NL:RBDHA:2021:5337 (Vereniging Milieudefensie/Royal Dutch Shell PLC).⁵

In response to these trends, and ominously for the future of oil proposed to be extracted from the Basin and the Line's fiscal foundation, car manufacturers are increasingly committing to the sale of electric vehicles in the coming years. Immediately following President Biden's executive order on clean cars and trucks, Ford, General Motors and Stellantis jointly announced their intention to achieve sales of 40-50% of annual U.S. volumes of electric vehicles by 2030. Press Release, General Motors, Ford, GM and Stellantis Joint Statement of Electric Vehicle Annual Sales (Aug. 5, 2021).⁶ Volkswagen has set a similar global sales target for 2030, while by that date Ford has separately committed to sell only electric passenger vehicles in Europe. Press Release, Volkswagen Group, NEW AUTO: Volkswagen Group Set to Unleash Value in Battery-Electric Autonomous Mobility World (July 13, 2021);⁷ Press Release, Ford Motor Co., Ford Europe Goes All-In on EVs on Road to Sustainable Profitability (Feb. 17, 2021).⁸

Other automakers have announced time horizons for transitioning to fully electrified vehicle fleets, including as early as 2025. See, e.g., Press Release, Volvo Car USA, Volvo Cars to be Fully Electric by 2030 (Mar. 2, 2021);⁹ Press Release, Tata Motors, Jaguar Land Rover Reimagines the Future of Modern Luxury by Design (Feb. 15, 2021) (announcing that Jaguar vehicles will be "all-electric" by 2025);¹⁰ see also Press Release, Nissan Motor Corp., Nissan Unveils Ambition 2030 Vision to Empower Mobility and Beyond (Nov. 28, 2021) (announcing

⁴ Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541.

⁵ Available at: <https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2021:5339>. Since then, Shell has sold its assets in the Permian Basin and pulled out of a controversial plan to develop a new oil field near the Shetland Islands. See Press Release, Shell, Shell Completes Sale of Permian Business to ConocoPhillips (Dec. 1, 2021), <https://www.shell.com/media/news-and-media-releases.html>; Danica Kirka, Shell Pulls Out of Controversial Cambo Project in Scotland, Associated Press, December 3, 2021, <https://apnews.com/article/business-europe-environment-economy-scotland-ef91aa323b36cb3d8f3d7dcf9b616a36>.

⁶ Available at: <https://media.gm.com>.

⁷ Available at: <https://www.volkswagen-newsroom.com/en/press-releases>.

⁸ Available at: <https://media.ford.com/content/fordmedia/feu/en/news.html>.

⁹ Available at: <https://www.media.volvocars.com/us/en-us/media/pressreleases/list>.

¹⁰ Available at: <https://www.tatamotors.com/investors/jlr-press-release-archive/>.

investments of \$17.6 billion over the next five years to accelerate the electrification of its vehicle lineup).¹¹ Prevailing company valuations highlight the internal combustion engine's bleak future, with electric vehicle manufacturers Tesla and Rivian currently having enterprise values of approximately \$1 trillion and \$100 billion, respectively, making them the first and third most valuable automobile manufacturers by market capitalization. See Yahoo Finance, https://finance.yahoo.com/screener/predefined/auto_manufacturers/ (last visited Dec. 14, 2021).

Not surprisingly, the American oil majors uniformly identify increased political and social attention to greenhouse gas emissions as risks that may result in reduced demand for their oil. See, e.g., ConocoPhillips, Annual Report (Form 10-K) 27 (Feb. 16, 2021) (“[T]he new administration has recommitted the United States to the Paris Agreement, and a significant number of U.S. state and local governments and major corporations headquartered in the U.S. have also announced their intention to satisfy [the Paris Agreement] commitments.”); Pioneer Natural Resources Co., Annual Report (Form 10-K) 28 (Mar. 1, 2021) (noting that numerous proposals “have been made and could continue to be made at the international, national, regional and state levels of government to monitor and limit existing emissions of GHGs as well as to restrict or eliminate such future emissions”); Chevron Corp., Annual Report (Form 10-K) 22 (Feb. 25, 2021) (“[I]f new legislation, regulation, or other governmental action contributes to a decline in the demand for the company’s products, this could have a material adverse effect on the company and its financial condition.”); Occidental Petroleum Corp., Annual Report (10-K) 10 (Feb. 26, 2021) (explaining that government action relating to greenhouse gas emissions could impose increased operating and maintenance costs, such as “higher rates charged by service providers” or “promote the use of alternative sources of energy and thereby decrease demand for oil”).

This risk is being increasingly reflected in the financial markets. As noted in my dissent to the January 5 Decision, investment managers—under pressure from their clients to pursue environmentally sustainable investing—have begun aligning their portfolios with net-zero emissions. January 5 Decision, FD 36284, slip op. at 16 (Board Member Oberman dissenting).¹² This includes putting pressure directly on oil producers to develop more sustainable business strategies. For example, on May 26, 2021, Exxon Mobil Corporation’s shareholders elected to its Board—over the opposition of company management—three insurgent directors from a small hedge fund, Engine No. 1. Exxon Mobil Corp., Current Report (Form 8-K/A) 3 (June 21, 2021). These nominees were advanced for the express purpose of directing the company towards a “long-term commitment to only funding projects that can break-even at much more conservative oil and gas prices,” and to explore growth areas in “net-zero emission energy sources and clean energy infrastructure.” Exxon Mobil Corp., Definitive Proxy Statement (Schedule 14A) 5

¹¹ Available at: <https://global.nissannews.com/en/pages/all-news-archive>.

¹² On May 20, 2021, President Biden signed an executive order, Climate-Related Financial Risk, which sets forth a policy of “advancing consistent, clear, intelligible, comparable, and accurate disclosure of climate-related financial risk” Climate-Related Financial Risk, Exec. Order No. 14030, 86 Fed. Reg. 27967 (May 26, 2021). The executive order acknowledges the risk to the competitiveness of companies and markets, as well as workers and communities, should financial institutions fail to adequately account for “the global shift away from carbon-intensive energy sources and industrial processes.” Id. at 27967.

(March 15, 2021). In its proxy statement, Engine No. 1 emphasized “growing long-term oil and gas uncertainty” arising from a “decarbonizing world.”¹³ *Id.* at 1.

It bears emphasizing that the political and business developments described above constitute only the latest and a small set of examples of the global transition away from fossil fuels. This broad and rapidly accelerating trend calls into question both the viability of the Coalition’s over \$1 billion rail construction project as well as its ability to raise money from private funding sources. It confirms the significant concerns I raised previously about the extent to which the project will both require the backing of, and put at risk, public funds. January 5 Decision, FD 36284, slip op. at 19 (Board Member Oberman dissenting). These concerns have been exacerbated by the Coalition’s decision not to supply (and indeed, to redact) oil and traffic projections from its consultant’s pre-feasibility study, creating the ineluctable inference that the withheld data, if revealed, would undermine the commercial viability of the project. January 5 Decision, FD 36284, slip op. at 14-15 & n.5 (Board Member Oberman dissenting). The majority’s continuing to turn a blind eye to this glaring omission is even more perplexing in light of the dramatic changes in the world oil market detailed above.

But make no mistake: the writing is on the wall. The Board has previously made clear that “significant questions surrounding the financial feasibility of [a] proposed rail project” may diminish its transportation merits and warrant against the granting of an exemption under § 10502. Tex. Cent. R.R. & Infrastructure, Inc.—Petition for Exemption—Passenger Rail Line Between Dallas & Houston, Tex. (Texas Central), FD 36025, slip op. at 14-15 (STB served July 16, 2020) (citing the RTP factors at 49 U.S.C. §§ 10101(4) and 10101(5) as a basis for denying a petition for exemption given “questions about increased costs and funding sources,” the magnitude of the project, and the substantial public interest). Although the Board in Texas Central permitted the petitioner there to proceed via application, so as to provide additional information about the project’s financial feasibility, an application in this case would not have changed the fact that the Line’s transportation merits are greatly impaired by a future that has little use for the product it will be built to deliver. Moreover, and as explained in the following section, regardless of whether the Coalition had proceeded via application or petition for exemption, the Line’s environmental impacts outweigh its transportation merits.

Environmental Impacts

Consideration of the Line’s environmental effects must treat as indirect effects those impacts associated with oil development in the Basin that will be supported by the Line,

¹³ The hedge fund Third Point Investors also recently announced that it had taken a stake in Shell in part to advance a growth strategy focused on “aggressive investment in renewables and other carbon reduction technologies.” Available at <https://thirdpointlimited.com/wp-content/uploads/2021/10/Third-Point-Q3-2021-Investor-Letter-TPIL.pdf>.] Weeks later, Shell announced plans to simplify its share structure to accelerate “delivery of its strategy to become a net-zero emissions business.” Press Release, Royal Dutch Shell, Notice of General Meeting – Shell Seeks Shareholder Approval to Change Articles to Implement a Simplified Structure (Nov. 15, 2021), <https://www.shell.com/media/news-and-media-releases/2021/november-press-release.html>.

including downstream greenhouse gas emissions that will result from the oil's eventual combustion. Contrary to the position taken in Today's Decision, the Board has the power to act on these impacts, including by denying construction authority, and accordingly has an obligation to consider them as reasonably foreseeable effects of the project. Only in doing so, may the Board reach the central question in this case: whether it is in the public interest for the Board to authorize the building of a railroad for the near exclusive purpose of facilitating oil and gas development, given all that we know today about the worsening global warming crisis and the role played by fossil fuel combustion. That question lies at the heart of whether the transportation merits of the project outweigh its environmental impacts, including the troubling and unavoidable disturbance to wetlands and wildlife that are in fact acknowledged by the majority as effects of this project. In my view, the Line is not worth these costs.

With respect to downstream greenhouse gas emissions, the Final EIS recognized that construction of the Line “would increase transportation capacity to ship an additional 130,000 to 350,000 barrels of oil on average each day from existing oil fields” (Final EIS 3.15-51; see also id. 3.15-3 to 3.15-4.) Further, it assumed that the oil from this new production would ultimately be refined into fuel and combusted, and it estimated that the resulting emission of carbon dioxide equivalents would total 19,785,953 metric tons annually under a low oil production scenario and 53,269,873 metric tons annually under a high oil production scenario, the latter of which would represent approximately 0.8% of nationwide greenhouse gas emissions and 0.1% of global greenhouse gas emissions. (Id. at 3.15-36.) The Final EIS also identified other, more localized impacts of oil and gas development on water resources, biological resources, soils, noise, land use, cultural resources, and socioeconomics, including from the drilling of new wells. (See generally id. § 3.15.) These impacts are acknowledged in Today's Decision. Today's Decision 17.

However, they are considered only for the purpose of assessing the project's cumulative impacts. Accordingly, **and importantly**, the Final EIS does not consider as an indirect impact the harm caused to the environment by downstream combustion of increased oil production enabled by the Line's construction. The Final EIS focuses instead only on the **incremental** de minimis effect of emissions from construction and operation of the Line **when added** to emissions from downstream combustion. (Final EIS 3.15-32); see also Twp. of Bordentown, NJ v. FERC, 903 F.3d 234, 258 (3d Cir. 2018) (explaining that a cumulative impact analysis looks at the marginal impact of the jurisdictional project when added to the non-jurisdictional projects' impacts). The majority approved this approach and in so doing obscured the centrality of the Line's construction to oil and gas development in the Basin, which will foreseeably cause far larger emissions from combustion of oil that will be moved over the Line.¹⁴ See Twp. of Bordentown,

¹⁴ In contrast to the estimated emissions from the production scenarios discussed above, the Final EIS estimated that “[greenhouse gas] emissions from rail operations . . . would represent a small percentage (ranging from 0.9 percent to 3.5 percent) of regional and statewide GHG emissions . . . and would not contribute significantly to global climate change.” (Final EIS 3.7-39.) Not surprisingly, the majority did not find cumulative adverse effects on greenhouse gas emissions or air quality, but rather identified only cumulative adverse effects on water resources, biological resources, paleontological resources, land use and recreation, visual resources, and socioeconomics. Today's Decision 16.

903 F.3d at 258 (“Where the other projects’ impacts are themselves already significant or greatly outweigh the jurisdictional projects’ impacts, such that the jurisdictional project will not meaningfully influence the extent of the already significant environmental impacts, the cumulative impacts test is inapposite.”).

Considering the environmental impacts of oil development in the Basin only in the context of a cumulative impact analysis, and not as reasonably foreseeable impacts attributable to the Line itself, materially affects how those effects are factored by the Board when weighing the Line’s transportation merits against its environmental impacts. See Landmark West! v. U.S. Postal Serv., 840 F. Supp. 994, 1011 (S.D.N.Y. 1993) (explaining that a cumulative impact analysis “entails the consideration of the foreseeable actions of others as background factors, but does not require that the impacts of others’ actions be weighed in assessing the significance” of the agency’s actions, only the “marginal impacts of its own actions”), aff’d, 41 F.3d 1500 (2d Cir. 1994).¹⁵ Today’s Decision justifies this approach by relying on Department of Transportation v. Public Citizen, 541 U.S. 752 (2004), contending that the Board cannot be the “legally relevant” cause of impacts from oil and gas development, and therefore those impacts cannot be considered indirect impacts of the construction project. Today’s Decision 18. Today’s Decision emphasizes that the Board has no authority or jurisdiction over development of oil and gas in the Basin nor any authority to control or mitigate the impacts of any such development. Id. Importantly, and although not said in so many words, its reliance on Public Citizen necessarily implies that the Board cannot be the cause of such impacts ***because it lacks the power*** to act on them when deciding whether to approve or deny the Coalition’s petition.

I disagree. In Public Citizen, the Supreme Court indeed held that where an “agency has no ability to prevent a certain effect due to its limited statutory authority over the relevant actions, the agency cannot be considered a legally relevant ‘cause’ of the effect,” and hence need not consider such effects under NEPA. 541 U.S. at 770. That case, however, is readily distinguishable. At issue in Public Citizen was the planned lifting of a moratorium by the President (with authority from Congress) on cross-border truck traffic from Mexico and related regulations under review by the Federal Motor Carrier Safety Administration (FMCSA). Although the regulations had to be issued before Mexican traffic could enter the United States, by statute the rules were limited to safety and financial responsibility issues. Id. at 758-59. The Supreme Court concluded that the FMCSA had no obligation to evaluate emissions from the truck traffic when assessing the environmental impact of its regulations because FMCSA “simply lack[ed] the power to act on” any such emissions data. Id. at 768. Key to this holding was the Supreme Court’s finding that FMCSA had “***no ability to countermand the President’s lifting of the moratorium***” or otherwise “***categorically***” prevent such traffic from entering the United States. Id. at 766 (emphasis added). As the Supreme Court explained, the “legally relevant cause of entry of the Mexican trucks is *not* FMCSA’s action, but instead the actions of the President in lifting the moratorium and those of Congress in granting the President this authority while simultaneously limiting FMCSA’s discretion.” Id. at 769.

¹⁵ Even though the labeling of the effects of oil and gas development in the Basin as indirect or cumulative impacts may not have affected their analysis within the Final EIS (Today’s Decision 18 n.15), it does affect how they are weighed by the Board.

The scope of Public Citizen becomes even more apparent when considering how the case has been applied in other circumstances involving downstream greenhouse gas emissions. For example, in Sierra Club v. FERC (Freeport), the D.C. Circuit held that the Federal Energy Regulatory Commission (FERC) had no obligation to consider such emissions when approving facility upgrades at a liquified natural gas terminal that would be used to support export operations. 827 F.3d 36, 47-48 (D.C. Cir. 2016). This was because the Department of Energy (DOE) has exclusive jurisdiction over the export of natural gas as a commodity and had already authorized the terminal in Freeport to export gas. Id. at 40. DOE merely delegated to FERC licensing authority over the siting, construction, expansion, and operation of specific facilities. Id. at 40-41. Citing Public Citizen, the D.C. Circuit concluded that FERC could not be the “legally relevant” cause of emissions from gas exported from the terminal because DOE’s “intervening” and “independent decision to allow exports—a decision over which [FERC] has no regulatory authority—[broke] the NEPA causal chain and absolve[d]” FERC of responsibility to consider impacts it “could not act on.” Id. at 47-48.

Public Citizen, which the majority relied upon, and Freeport, which shows its application, lay bare the flaw in the majority’s reasoning. Had Congress itself authorized construction of a railroad out of the Basin, or vested that authority in another federal agency, but left to the Board the narrower responsibility of deciding where that line should be placed and the details of its construction, then perhaps Public Citizen would be instructive. But here, the Board has independent and plenary authority, and exclusive jurisdiction, over whether a line of railroad should be built in the first instance. 49 U.C.S. §§ 10501, 10901. See Alaska Survival v. STB, 705 F.3d 1073, 1086 (9th Cir. 2013) (emphasizing that the decision as to “which communities are entitled to important railroad development projects” is “committed in the first instance to the agency authorized by Congress to approve rail line construction projects, the STB”). That the Board has no authority or jurisdiction over development of oil and gas in the Basin, (Today’s Decision 18),¹⁶ and generally cannot restrict the types of products and commodities that are transported on already constructed rail lines, (Final EIS 3.15-36),¹⁷ are not the types of overarching limitations like that at issue in Public Citizen which would diminish, let alone inform, the Board’s authority over rail construction.

The D.C. Circuit’s decision in Sierra Club v. FERC (Sabal Trail) is on point. That case involved FERC’s decision to approve the construction and operation of certain interstate natural gas pipelines in the southeastern United States. Sabal Trail, 867 F.3d 1357, 1363 (D.C. Cir. 2017). As here, at issue was whether Public Citizen excused FERC’s decision not to attribute to the pipeline, and consider, greenhouse gas emissions arising from the end-use combustion of gas to be moved over the pipeline. Id. at 1365, 1371-72. In its decision, the D.C. Circuit made clear

¹⁶ See Birkhead v. FERC, 925 F.3d 510, 519 (D.C. Cir. 2019) (rejecting argument that agency cannot be legally relevant cause of emissions from gas transported via agency-approved pipeline “due to its lack of jurisdiction over any entity other than the pipeline applicant”).

¹⁷ The Final EIS cites to Riffin v. STB, 733 F.3d 340, 345-47 (D.C. Cir. 2013), for the established proposition “that **railroads** have a common carrier obligation to carry all commodities, including hazardous materials, upon reasonable request” (Final EIS 3.15-6 (emphasis added).) While that may be true, it has nothing to do with the **Board’s** authority to license rail construction and its obligation to consider environmental impacts when doing so.

that the relevant question is not “‘What activities does [an agency] regulate?’ but instead . . . ‘What factors can [the agency] consider when regulating in its proper sphere?’” *Id.* at 1373. In other words, is an agency “forbidden to rely” on the effects of the impact as “justification” for denying a license? *Id.* The Court found that FERC was “not so limited.” *Id.* Critical to its analysis was that Congress gave FERC broad power over the construction and operation of interstate pipelines, expansively directing it to consider the “public convenience and necessity” when reviewing an application. *Id.* (citing 15 U.S.C. § 717f(e).) The Court emphasized that FERC balances the “public benefits against the adverse effects of the project,” including “adverse environmental effects,” and can deny construction authority “on the ground that [it] would be too harmful to the environment.” *Sabal Trail*, 867 F.3d at 1373. For all of these reasons, the Court concluded that FERC “*is a ‘legally relevant cause’ of the direct and indirect environmental effects of the pipelines it approves.*” *Id.* (emphasis added).¹⁸

As in *Sabal Trail*, here too the Board has a broad statutory obligation not to authorize rail construction when doing so would be “inconsistent with the public convenience and necessity.” 49 U.S.C. § 10901(c). And although in this case the Coalition has proceeded via a petition for exemption from the prior approval requirements of § 10901, use of the exemption process does not affect the level of environmental review a project receives. *Cal. High-Speed Rail Auth.—Constr. Exemption—in Merced, Madera, and Fresno Cnty., Cal.*, FD 35724, slip op. at 21-22 (STB served June 13, 2013). The Board has also made clear that environmental impacts can lead it to categorically decline to authorize rail construction, including when considering a petition for exemption. *Alaska R.R.—Constr. & Operation Exemption—Rail Line Between N. Pole & Delta Junction, Alaska*, FD 34658, slip op. at 10 (STB served Jan. 6, 2010). In either circumstance, and as in *Today’s Decision*, the Board weighs the project’s transportation merits against its environmental impacts when determining whether to grant construction authority. (*Today’s Decision* 23-25.) This is in keeping with NEPA, which requires the Board to consider the environmental impacts of a decision permitting rail construction, regardless of whether it does so by granting an application under § 10901 or an exemption under § 10502.¹⁹ 42 U.S.C. § 4332(C).

I see no reason why the Line’s construction would not otherwise be a sufficient cause of the oil and gas development impacts and downstream emissions identified in the Final EIS. It

¹⁸ See also *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 73 (D.D.C. 2019) (holding that because Bureau of Land Management (BLM) could decline to sell an oil and gas lease if the “environmental impact of those leases—including use of the oil and gas produced—would not be in the public’s long-term interest,” BLM was required to consider downstream greenhouse gas emissions “as indirect effects of oil and gas leasing”), *appeal dismissed per stipulation*, 2021 WL 3176109 (D.C. Cir. Apr. 28, 2021).

¹⁹ In any event, the Board may not exempt construction from § 10901 where regulation is necessary to carry out the RTP, including those factors calling for the development of a sound rail transportation system to meet the public need, operation of transportation facilities without detriment to public health and safety, and energy conservation. 49 U.S.C. § 10502; 49 U.S.C. § 10101(4), (8), (14). In my view, these policy directives broadly warrant the Board’s consideration of the environmental impacts to be caused by oil development in the Basin, including downstream greenhouse gas emissions.

may well be the case that oil development “may occur, and is already taking place, without the proposed rail line,” (Final EIS T-44), and that the “actual volumes of crude oil that would move over the Line would depend on various independent variables and influences,” (Today’s Decision 17). However, the Coalition’s own position has been that trucking oil produced from the Basin to distant markets is cost prohibitive and that “the lack of rail access has effectively capped oil production in the Basin.” (Pet. 13-14.) As the Coalition puts it, a rail line would “enable local producers to increase their output under appropriate market conditions.” (Id. at 15.) It cannot be disputed that “but for” the proposed rail line, significantly less oil will be extracted from the Basin. See Mid States Coal. for Progress v. STB, 345 F.3d 520, 548-50 (8th Cir. 2003) (requiring that agency consider emissions from combustion of coal transported over rail line as it was “almost certainly true” that the line would increase the “availability of inexpensive coal” and “any adverse effects that result from burning coal”).²⁰

Of course, a “‘but for’ causal relationship is insufficient to make an agency responsible for a particular effect under NEPA” Public Citizen, 541 U.S. at 767. Instead, “NEPA requires analysis of an effect only where there is a reasonably close causal relationship between the environmental effect and the alleged cause, analogous to the doctrine of proximate cause from tort law.” (Final EIS T-43 (citing Public Citizen, 541 U.S. at 767).) As the Supreme Court has made clear, proximate cause “**turns on policy considerations**” and where best to “draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not.” Public Citizen, 541 U.S. at 767 (citations omitted) (emphasis added). Notably, in Public Citizen, prevailing policy dictated that the FCMSA could not possibly be the proximate cause of the motor carrier emissions at issue since, again, FMCSA had “no ability categorically to prevent the cross-border operation of Mexican motor carriers.” Id. at 768. That is, in Public Citizen the Court’s analysis of proximate cause turned on its conclusion that the FMCSA’s lacked authority over the traffic.

As explained above, Public Citizen does not “excuse” the Board from considering impacts from oil and gas development. Sabal Trail, 867 F.3d at 1373. And it otherwise seems well within the range of reasonable policy considerations—and frankly, the only reasonable policy consideration—for the Board to weigh these impacts when making its final decision, ***at least with respect to this particular line***. As noted in my prior dissent, there is no question that increased oil production is the “singular rationale” for the Line: its potential use by other industries is ancillary to the movement of oil and not valuable enough standing alone to justify the line’s construction and continued operation. January 2020 Decision, slip op. at 14 (Board Member Oberman dissenting) (citing Pet. 13-17). That is, increased oil output, its refinement

²⁰ The Final EIS suggests that this aspect of Mid States would not stand today, given the Supreme Court’s subsequent decision in Public Citizen. (Final EIS T-440.) But as explained above, the Court in Public Citizen grounded its holding on FCMSA’s inability to prevent the relevant environmental effect “due to its limited statutory authority over the relevant actions.” 541 U.S. at 770. Mid States did not address whether the Board had the authority to deny or condition its construction approval on the emissions it originally failed to consider. Mid States appears still to be relevant for the proposition that the Board may be the legally relevant cause of downstream impacts that would not occur “but for” the agency’s construction approval.

into petroleum, and that petroleum's ultimate sale and combustion are not only "reasonably foreseeable," they are "the project's entire purpose."²¹ Sabal Trail, 867 F.3d at 1372.

Moreover, there can be no question about the significance of the threat that global warming poses to the environment as well as to our continued prosperity. Days after OEA issued the Final EIS, the United Nations' Intergovernmental Panel on Climate Change's (IPCC's) Working Group I released its contribution to the IPCC's Sixth Assessment Report, which presents the most up-to-date understanding of the current state of the climate.²² The report presents a dire picture. Among other things, it concludes that: (i) it is "unequivocal" that human influence has warmed the atmosphere, ocean, and land; (ii) global surface temperature in the first two decades of the 21st century was .99°C higher than 1850-1900; (iii) human-induced climate change is "already affecting many weather and climate extremes in every region across the globe"; (iv) evidence attributing heatwaves, heavy precipitation, droughts, and tropical cyclones to human influences has strengthened in the last several years; (v) global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in greenhouse gas emissions occur in the coming decades;²³ and (vi) with further global warming, every region around the world will increasingly experience extreme climate events, including heavy precipitation, flooding, and droughts. IPCC 2021 at SPM-5, SPM-10, SPM-17, and SPM-32.

These effects are already being felt. July 2021 was the hottest month ever recorded, according to global data from the National Oceanic and Atmospheric Administration (NOAA), with parts of the world witnessing record high temperatures, unprecedented heat waves, floods, and other extreme weather events.²⁴ The World Meteorological Organization (WMO), an agency

²¹ When weighing the project's transportation merits against its environmental impacts, Today's Decision stresses that a "rail transportation option could also support the diversification of local economies in the Basin, which could support additional employment and expand the regional economy." (Today's Decision 24.) But it gives no weight to the nature of the industry the Line is meant to support and that industry's impact on climate change. While local economic development may be a reason to support the Line's construction, if the majority is to weigh the economic benefits of that development, it should weigh *all* of its harms as well. When that is done, it is apparent that the project's environmental impacts outweigh its benefits.

²² See Richard Allan, et al., Summary for Policymakers in Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2021 Summary for Policymakers) (Valérie Masson-Delmonte et al., eds., in press), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf.

²³ According to the Climate Action Tracker— an independent scientific analysis that tracks government climate action and measures it against the globally agreed Paris Agreement— current policies in place around the world are projected to result in 2.7°C warming above pre-industrial levels. Temperature, Climate Action Tracker, <https://climateactiontracker.org/global/temperatures/#> (last updated Nov. 9, 2021).

²⁴ See NOAA, It's Official: July was Earth's Hottest Month on Record (Aug. 13, 2021), available at: <https://www.noaa.gov/news-features>. On July 11, 2021, the National Weather

of the United Nations, has predicted that the annual mean global temperature is likely to be at least 1°C above pre-industrial levels in each of the next five years, with a 90% chance that at least one of those years will be the warmest on record. Press Release, WMO, New Climate Predictions Increase Likelihood of Temporarily Reaching 1.5°C in Next 5 Years (May 27, 2021).²⁵ The past seven years are on track to be the warmest on record. Press Release, World Meteorological Organization, State of Climate in 2021: Extreme Events & Major Impacts (Oct. 21, 2021). As detailed above, our national and state governments and many leading components of the private sector have accelerated their response to the growing environmental disaster. ***Decarbonization is national policy.***

The growing threat from global warming is too great, and its connection to the combustion of fossil fuel too obvious, for the environmental impacts of Line-induced oil and gas development in the Basin to be treated as anything other than what they are: reasonably foreseeable effects of the rail construction project itself. For the reasons explained above, the Board has the power to act on impacts resulting from that development when deciding whether to approve the petition, and can and should engage with the central question presented in this matter: whether a railroad built for the purpose of supporting oil and gas development, given the need for decarbonization and the harmful effects of global warming, is within the public interest. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349-50 (1989) (holding that under NEPA an agency must “carefully consider” information concerning significant environmental impacts when “reaching its decision”). Such an approach properly situates the significant environmental impacts that nobody appears to disagree are attributable to the Line’s construction and operation—among other things, impacts on surface waters and the loss of wetlands, disruption to habitat of threatened and endangered species, and disturbance of the use of otherwise pristine land—all of which are unavoidable and cannot be mitigated. (Final EIS S-8 to S-9.) Is the Line worth all of this given the activity it is intended to support? Without evidence that there is some particularized need for oil from the Basin, in the face of overwhelming evidence to the contrary, and given the irrefutable fact that this oil’s use will contribute to the global warming crisis, I cannot say that it is.

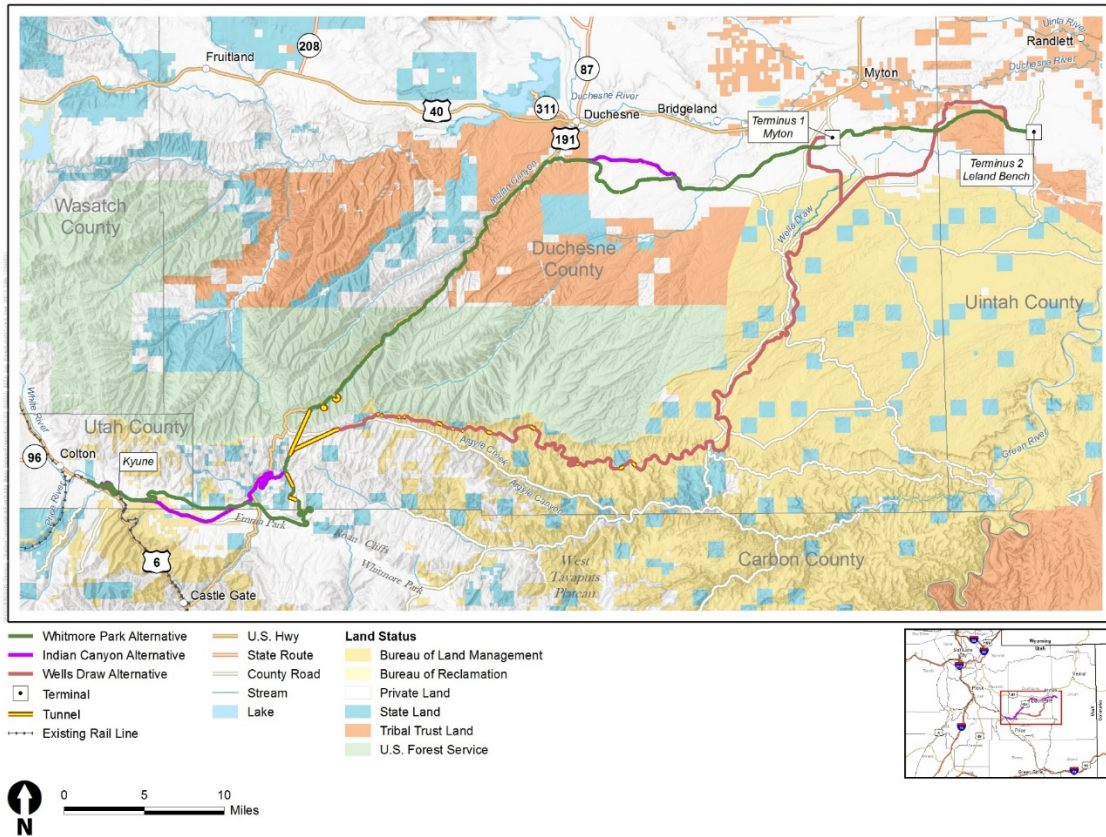
I dissent.

Service recorded a temperature of 54°C (129.2°F) in Death Valley, which tied the record (set last year) for the hottest formally recognized daytime temperature ever. July and August also saw unprecedented heat waves in the Pacific Northwest, national high temperature records set in Spain, Tunisia, and Turkey, Germany ravaged by floods, and parts of China receiving a year’s worth of rain in just three days. Press Release, World Meteorological Organization, State of Climate in 2021: Extreme Events & Major Impacts (Oct. 21, 2021), available at: <https://public.wmo.int/en/media/press-release>.

²⁵ Available at: <https://public.wmo.int/en/media/press-release>.

APPENDIX A

MAP OF ALTERNATIVES



APPENDIX B

ENVIRONMENTAL MITIGATION CONDITIONS

VOLUNTARY MITIGATION MEASURES

Construction and Rail Operations Safety

VM-1. The Seven County Infrastructure Coalition (Coalition) will follow all applicable federal Occupational Safety and Health Administration (OSHA), Federal Railroad Administration (FRA), tribal, and state construction and operational safety regulations to minimize the potential for accidents and incidents during construction and operation of the rail line.

Grade Crossing Safety

VM-2. The Coalition will consult with appropriate federal, tribal, state, and local transportation agencies to determine the final design of the at-grade crossing warning devices. Implementation of all grade-crossing warning devices on public roadways will be subject to review and approval, depending on location, by the Ute Indian Tribe of the Uintah and Ouray Reservation (Ute Indian Tribe), Utah Department of Transportation (UDOT), U.S. Forest Service (Forest Service), or Carbon, Duchesne, or Uintah Counties. The Coalition will follow standard safety designs for each at-grade crossing for proposed warning devices and signs. These designs will follow the Federal Highway Administration *Manual on Uniform Traffic Control Devices for Streets and Highways* as implemented by UDOT and the American Railway Engineering and Maintenance-of-Way Association standards for railroad warning devices. They will also comply with applicable UDOT, tribal, city, and county requirements.

VM-3. For construction of road crossings, when reasonably practical, the Coalition will consult with tribal and local transportation officials regarding detours and associated signs, as appropriate, or maintain at least one open lane of traffic at all times to allow the quick passage of emergency and other vehicles.

VM-4. The Coalition will develop a plan to consult with private landowners to determine the final details and reasonable signage for grade crossings on private roads.

VM-5. Where practical, at-grade crossings for minor roads and private roads will be combined and consolidated into right-angle, at-grade crossings for safety, and in order to reduce the total the number of highway-rail at-grade crossings.

VM-6. The Coalition will consult with affected communities regarding ways to improve visibility at highway-rail at-grade crossings, including by clearing vegetation or installing lights at the crossing during construction.

Hazardous Materials Handling and Spills during Construction

VM-7. Prior to initiating any project-related construction activities, the Coalition will develop a spill prevention, control, and countermeasures plan in consultation with federal, tribal, state and local governments. The plan will specify measures to prevent the release of petroleum products or other hazardous materials during construction activities and contain such discharges if they occur.

VM-8. In the event of a spill over the applicable reportable quantity, the Coalition will comply with its spill prevention, control, and countermeasures plan and applicable federal, state, local and tribal regulations pertaining to spill containment, appropriate clean-up, and notifications.

VM-9. The Coalition will require its construction contractor(s) to implement measures to protect workers' health and safety and the environment in the event that undocumented hazardous materials are encountered during construction. The Coalition will document all activities associated with hazardous material spill sites and hazardous waste sites and will notify the appropriate state, local, and tribal agencies according to applicable regulations. The goal of the measures is to ensure the proper handling and disposal of contaminated materials including contaminated soil, groundwater, and stormwater, if such materials are encountered. The Coalition will use disposal methods that comply with applicable solid and hazardous waste regulations.

VM-10. The Coalition will ensure that gasoline, diesel fuel, oil, lubricants, and other petroleum products are handled and stored to reduce the risk of spills contaminating soils or surface waters. If a petroleum spill occurs in the project area as a result of rail construction, operation, or maintenance and exceeds specific quantities or enters a water body, the Coalition (or its agents) will be responsible for promptly cleaning up the spill and notifying responsible agencies in accordance with federal, state, and tribal regulations.

Hazardous Materials Transport and Emergency Response

VM-11. The Coalition will prepare a hazardous materials emergency response plan to address potential derailments or spills. This plan will address the requirements of the Pipeline and Hazardous Materials Safety Administration and FRA requirements for comprehensive oil spill response plans. The Coalition will distribute the plan to federal, state, local, and tribal emergency response agencies. This plan shall include a roster of agencies and people to be contacted for specific types of emergencies during rail construction, operation and maintenance activities, procedures to be followed by particular rail employees, emergency routes for vehicles, and the location of emergency equipment.

VM-12. The Coalition will work with the affected communities to facilitate the development of cooperative agreements with other emergency service providers to share service areas and emergency call response.

VM-13. After construction is completed, the Coalition will implement a desktop simulation of its emergency response drill procedures with the voluntary participation of local emergency response organizations. If necessary, the Coalition will update the hazardous materials emergency response plan based on the findings and observations of the simulated emergency response.

VM-14. In the event of a reportable hazardous materials release, the Coalition will notify appropriate federal, state, and tribal environmental agencies as required under federal, state, and tribal law.

VM-15. The Coalition will comply with FRA, Pipeline and Hazardous Materials Safety Administration, Transportation Security Administration regulations and tribal ordinances or plans applicable to the safe and secure transportation of hazardous materials.

Topography, Geology, and Soils

VM-16. The Coalition will limit ground disturbance to only the areas necessary for project-related construction activities.

VM-17. During project-related earth-moving activities, the Coalition will require the contractor to remove topsoil and segregate it from subsurface soils. Where practical, the contractor will also stockpile topsoil to be applied later during reclamation activities in disturbed areas along the right-of-way.

VM-18. The Coalition will place the topsoil and other excavated soil stockpiles in areas away from environmentally or culturally sensitive areas and will use appropriate erosion control measures on and around stockpiles to prevent or contain erosion.

VM-19. The Coalition will submit a notice of intent to request permit coverage under Utah Pollutant Discharge Elimination System Construction General Permit UTRC00000 for construction stormwater management.

VM-20. The Coalition will submit an application for coverage under the National Pollutant Discharge Elimination System stormwater construction permits pursuant to Section 402 of the Clean Water Act for construction stormwater management on tribal land.

VM-21. The Coalition will develop a stormwater pollution prevention plan, which will include construction Best Management Practices (BMPs) to control erosion and reduce the amount of sediment and pollutants entering surface waters, groundwater, and waters of the United States. The Coalition will require its construction contractor(s) to follow all water quality control conditions identified in all permits, including the Section 404 permit from the U.S. Army Corps of Engineers (Corps) and the Section 401 Water Quality Certification from the Utah Department of Environmental Quality (UDEQ) and the U.S. Environmental Protection Agency (USEPA).

VM-22. The Coalition will revegetate disturbed areas, where practical and in consultation with the Ute Indian Tribe as applicable, when construction is completed. The goal of reclamation will be the rapid and permanent re-establishment of native groundcover on disturbed areas to prevent soil erosion, where feasible. If weather or seasonal conditions prevent vegetation from being quickly re-established, the Coalition will use measures such as mulching, erosion-control blankets, or dust-control palliatives to prevent erosion until vegetative cover is established. The Coalition will monitor reclaimed areas for 3 years. For areas where efforts to establish vegetative cover have been unsuccessful after 1 year, the Coalition will reseed annually for up to 3 years as needed.

Air Quality

VM-23. Where practical and in consultation with the Ute Indian Tribe as applicable, the Coalition will implement appropriate fugitive-dust controls such as spraying water or other dust treatments in order to reduce fugitive-dust emissions created during project-related construction activities. The Coalition will require its construction contractor(s) to regularly operate water trucks on haul roads to reduce dust generation.

VM-24. The Coalition will work with its contractor(s) to make sure that construction equipment is properly maintained and that mufflers and other required pollution-control devices are in working condition in order to limit construction-related air pollutant emissions.

Water Resources

VM-25. The Coalition will obtain a permit from the Corps under Section 404 of the Clean Water Act before initiating project-related construction activities in wetlands and other jurisdictional waters of the United States. The Coalition will comply with all conditions of the Section 404 permit.

VM-26. The Coalition will obtain a Section 401 Water Quality Certification from the State of Utah and USEPA. The Coalition will incorporate the conditions of the Section 401 Water Quality Certification into its construction contract specifications and will monitor the project for compliance.

VM-27. The Coalition will minimize impacts on wetlands to the extent practicable in the final design of the selected alternative. After all practicable steps have been taken to minimize impacts on wetlands, the Coalition agrees to prepare a compensatory mitigation plan for any remaining wetland impacts in consultation with the Ute Indian Tribe where applicable. Compensatory mitigation may include any one or a combination of the following five methods: restoring a previously existing wetland or other aquatic site, enhancing an existing aquatic site's functions, establishing (that is, creating) a new aquatic site, preserving an existing aquatic site, and/or purchasing credits from an authorized wetland mitigation bank.

VM-28. Bridges at perennial streams will be designed to maintain a natural substrate.

VM-29. The Coalition will obtain stream alteration permits from the Utah Division of Water Rights for crossing waters of the state, and any applicable tribal permits, and will comply with all conditions of the permits.

VM-30. The Coalition will construct stream crossings during low-flow periods, when practical.

VM-31. When practical and in consultation with the Ute Indian Tribe where applicable, the Coalition will relocate natural streams using bioengineering methods, where relocation is needed and is unavoidable.

VM-32. For streams and rivers with a floodplain regulated by the Federal Emergency Management Agency or the Ute Indian Tribe, the Coalition will design the stream crossing with the goal of not impeding floodwaters and not raising water surface elevations to levels that would change the regulated floodplain boundary. If flood elevations change, the Coalition will coordinate with Federal Emergency Management Agency and/or tribal or local floodplain managers to obtain a Letter of Map Revision where construction of bridges, culverts, or embankments results in an unavoidable increase greater than 1 foot to the 100-year water surface elevations.

Biological Resources

VM-33. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for sensitive species that could potentially be impacted by the project.

VM-34. The Coalition will require its contractor(s) to comply with the requirements of the Migratory Bird Treaty Act in consultation with the Ute Indian Tribe as applicable. The following measures will be conducted by the Coalition and/or its contractor(s).

- a. Where practical, any ground-disturbing, ground-clearing activities or vegetation treatments will be performed before migratory birds begin nesting or after all young have fledged.
- b. If activities must be scheduled to start during the migratory bird breeding season, the Coalition will take steps to prevent migratory birds from establishing nests in the potential impact area. Birds can be hazed to prevent them from nesting until egg(s) are present in the nest. The Coalition or its agents will not haze or exclude nest access for migratory birds and other sensitive avian species.
- c. If activities must be scheduled during the migratory bird breeding season, a qualified biologist will perform a site-specific survey for nesting birds starting no more than 7 days prior to ground-disturbing activities or vegetation treatments. Birds with eggs or young will not be hazed, and nests with eggs or young will not be moved until the young are no longer dependent on the nest. A qualified biologist will confirm that all young have fledged.
- d. If nesting birds are found during the survey, the Coalition will establish appropriate seasonal or spatial buffers around nests. Vegetation treatments or ground-disturbing

activities within the buffer areas will be postponed, where feasible, until the birds have left the nest. A qualified biologist will confirm that all young have fledged.

VM-35. The Coalition will execute a Mitigation Agreement with the Utah Division of Wildlife Resources (UDWR) to address impacts within the Carbon Sage-grouse Management Area (CSGMA). The Coalition has discussed several potential mitigation strategies with UDWR and other local, state, tribal and federal stakeholders during the EIS process. The final CSGMA Mitigation Agreement will define the appropriate mitigation ratio for the project type and its impacts and the final mitigation approach.

VM-36. The Coalition shall comply with the Ute Indian Tribe's Greater Sage-Grouse Conservation Ordinance as applicable.

VM-37. If the selected alternative impacts U.S. Bureau of Land Management (BLM) lands, the Coalition will request that BLM join as a signatory to the CSGMA Mitigation Agreement.

VM-38. The Coalition will prepare a noxious and invasive weed control plan in consultation with the Ute Indian Tribe as applicable. Where practical, the Coalition will include the policies and strategies in Utah's Strategic Plan for Managing Noxious and Invasive Weeds when designing response strategies for noxious and invasive weeds.

VM-39. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for sensitive plant species that could potentially be impacted by the project.

VM-40. The Coalition will work with UDWR, the Ute Indian Tribe, and adjacent landowners to define areas of the right-of-way that can be left without fences to maintain big game migration corridors.

VM-41. Where practical and necessary, the Coalition will install wildlife-safe fences to confine livestock within grazing allotments.

Cultural Resources

VM-42. The Coalition will work with the Ute Indian Tribe and others to develop training materials to educate construction supervisors about the importance of protecting cultural resources and the procedures for handling undocumented discoveries. The Coalition will make reasonable efforts to include the Ute Indian Tribe in the presentation of these materials.

VM-43. The Coalition will comply with the requirements of the Programmatic Agreement being developed by the Office of Environmental Analysis (OEA), the Advisory Council on Historic Preservation, Utah State Historic Preservation Office, Ute Indian Tribe, and other federal and state agencies in consultation with federally recognized tribes and other consulting parties.

Land Use

VM-44. If temporary construction easements on private property are needed, the Coalition will document the preconstruction conditions and, to the extent practical, will restore the land to its preconstruction condition after construction is complete.

VM-45. The Coalition will consult with landowners regarding grazing allotments and will install temporary fences during construction to allow continued grazing, where practicable. Once construction is complete, the Coalition will replace all permanent fences removed during construction.

VM-46. Where practical, the Coalition will maintain livestock access to water sources or will relocate water sources, maintain vehicle and livestock access to grazing allotments, and install safety fences and signs for grazing allotment entrances and exits to enable continuance of livestock operations within grazing allotments.

VM-47. The Coalition will secure agreements with utilities to establish responsibility for protecting or relocating existing utilities, if impacted by construction.

VM-48. The Coalition will coordinate with water districts to develop irrigation infrastructure protection or relocation plans, if irrigation infrastructure will be impacted by construction.

Community Outreach

VM-49. The Coalition will appoint a community liaison to consult with affected communities, businesses, and agencies and seek to develop cooperative solutions to local concerns regarding construction activities.

VM-50. The Coalition will appoint a tribal community liaison to address the needs and concerns of Ute Indian Tribe members and communities and seek to develop cooperative solutions to concerns regarding construction activities and rail operations.

VM-51. The Coalition will maintain a project website throughout the duration of construction to provide regular updates regarding construction progress and schedule.

VM-52. The Coalition will install construction warning and detour signs throughout the corridor and at recreation sites around the project area as needed.

Noise and Vibration

VM-53. The Coalition, in consultation with the Ute Indian Tribe, will comply with FRA regulations (49 Code of Federal Regulations [C.F.R.] Part 210) establishing decibel limits for train operation.

VM-54. The Coalition will work with its contractor(s) to make sure that project-related construction and maintenance vehicles are maintained in good working order with properly functioning mufflers to control noise.

Recreation

VM-55. If needed for the selected alternative, the Coalition will obtain approval from the Forest Service and will follow the conditions of the permit regarding access to, or temporary closure of, recreational features during construction.

VM-56. The Coalition will work with its construction contractor to maintain access to Forest Service roads during construction, where feasible.

ADDITIONAL MITIGATION MEASURES

Vehicle Safety and Delay

VSD-MM-1. The Coalition shall design and construct any new temporary or permanent access roads and road realignments to comply with the reasonable requirements of the UDOT Roadway Design Manual (UDOT 2020), other applicable road construction guidance (e.g., county road right-of-way encroachment standards), and land management agency or landowner requirements (e.g., BLM H-9113-1 Road Design Handbook) regarding the establishment of safe roadway conditions.

VSD-MM-2. During project-related construction activities, the Coalition and its contractors shall comply with speed limits and applicable laws and regulations when operating vehicles and equipment on public roadways.

VSD-MM-3. The Coalition shall obtain and abide by the reasonable requirements of applicable permits and approvals for any project-related construction activities within UDOT rights-of way or state highways where UDOT has jurisdiction and off-system roads that are maintained by UDOT.

VSD-MM-4. For each of the public at-grade crossings on the rail line, the Coalition shall provide and maintain permanent signs prominently displaying both a toll-free telephone number and a unique grade-crossing identification number in compliance with Federal Highway Administration regulations (23 C.F.R. Part 655). The toll-free number would enable drivers to report promptly any accidents, malfunctioning warning devices, stalled vehicles, or other dangerous conditions.

VSD-MM-5. The Coalition shall make Operation Lifesaver educational programs available to communities, schools, and other organizations located along the rail line. Operation Lifesaver is a nationwide, nonprofit organization that provides public education programs to help prevent collisions, injuries, and fatalities at highway/rail grade crossings.

VSD-MM-6. The Coalition shall consult with private landowners and communities affected by new at-grade crossings or that are adjacent to the rail line to identify measures to mitigate impacts on emergency access and evacuation routes and incorporate the results of this consultation into the Coalition's emergency response plan. These measures may include identifying new ingress and egress routes that could be used to improve safety in the event of an emergency.

Rail Operations Safety

ROS-MM-1. In the event of a reportable hazardous materials release, the Coalition shall notify appropriate local (county and city) agencies in addition to appropriate federal, state, and tribal environmental agencies as required under federal, state, and tribal law.

ROS-MM-2. As part of routine rail inspections or at least twice annually, the Coalition shall use appropriate technology to inspect both track geometry (horizontal and vertical layout of tracks) and local terrain conditions to identify problems with either the track or the surrounding terrain. The track inspection shall be designed and conducted so as to identify changes in track geometry that could indicate broken rails or welds, misalignments, and other technical issues with the track itself. The visual inspection of terrain shall be designed and conducted so as to identify evidence of subsidence, rockslides, undermining of the track, erosion, changes in runoff patterns, or other issues that could lead to structural weakening of the track bed and potentially cause an accident.

Water Resources

WAT-MM-1. To the extent practicable, the Coalition shall design culverts and bridges to maintain existing surface water drainage patterns, including hydrology for wetland areas, and not cause or exacerbate flooding. Project-related supporting structures (e.g., bridge piers) shall be designed to minimize scour (sediment removal) and increased flow velocity, to the extent practicable. The Coalition shall consider use of multi-stage culvert designs in flood-prone areas, as appropriate.

WAT-MM-2. The Coalition shall design culverts and bridges on land managed by federal, state, or tribal agencies to comply with reasonable applicable agency requirements. All surface water crossings on land under the jurisdiction of the Ute Indian Tribe shall be designed in consultation with the tribe's Business Committee, Tribal Water Quality Department, the Tribal Fish and Wildlife Department, and the Tribal Water Resources Department to ensure that those crossings would not adversely affect the quality of surface waters on the tribe's Uintah and Ouray Reservation.

WAT-MM-3. The Coalition shall design all stream realignments in consultation with the Corps and Utah Division of Water Rights as part of the Section 404 permit mitigation plan development and Utah Stream Alteration Program, respectively, to ensure that effects on stream functions are taken into account and minimized. The Coalition shall also consult with the Ute Indian Tribe through the tribe's Business Committee, Tribal Water Quality Department, the Tribal Fish and Wildlife Department, and the Tribal Water Resources

Department regarding the design of stream realignments to ensure that those realignments would not adversely affect the quality of surface waters on the tribe's Uintah and Ouray Reservation. To the extent practicable, the Coalition shall design realigned streams to maintain existing planform, geomorphology, bed material and flows.

WAT-MM-4. The Coalition shall design, construct, and operate the rail line and associated facilities to maintain existing water patterns and flow conditions and provide long-term hydrologic stability by conforming to natural stream gradients and stream channel alignment and avoiding altered subsurface flow (i.e., shallow aquifer subsurface flow) to the extent practicable.

WAT-MM-5. During project-related construction, the Coalition shall minimize, to the extent practicable, soil compaction and related effects (e.g., increase runoff and erosion), provide surface treatments to minimize soil compaction (e.g., break up compacted soils during reclamation to promote infiltration), and take actions to promote vegetation regrowth after the facilities (e.g., temporary staging areas) are no longer needed to support construction.

WAT-MM-6. During project-related construction, the Coalition shall implement erosion prevention, sediment control, and runoff control and conveyance BMPs to limit the movement of soils and sediment-laden runoff. On lands managed by federal, state, or tribal agencies, the Coalition shall design and implement these BMPs in consultation with the applicable agency. BMPs may include, but are not limited to, seeding disturbed ground and stockpiled soil, seed mixes, silt fences, sediment traps, ditch checks, and erosion monitoring. The Coalition shall coordinate with the appropriate land management agency, private landowner, or the Ute Indian Tribe to select seed mixes for use in restoration and reclamation activities. This may require consultation with range and ecology specialists to determine seed mixes and timing of seeding appropriate to the ecological site. Within Ashley National Forest, disturbed ground area, including stockpiled soil for later reclamation, shall be seeded to prevent erosion and the influx of weeds and invasive species. The Forest Rangeland Management or Ecology specialists shall be consulted for the appropriate seed mix and timing of seeding on Forest Service lands.

WAT-MM-7. During project-related construction, the Coalition shall use temporary barricades, fencing, and/or flagging around sensitive habitats (e.g., wetlands, flowing streams) to contain project-related impacts within the construction area. The Coalition shall locate staging areas in previously disturbed sites to the extent practicable, avoiding sensitive habitat areas whenever possible.

WAT-MM-8. The Coalition shall remove all project-related construction debris (including construction materials and soils) from surface waters and wetlands as soon as practicable following construction.

WAT-MM-9. The Coalition shall implement stormwater BMPs to convey, filter, and dissipate runoff from the rail line during rail operations. These could include, but would not be limited to, vegetated swales, vegetated filter strips, streambank stabilization, and

channelized flow dissipation, as appropriate. On lands managed by federal, state, or tribal agencies, the Coalition shall design and implement stormwater BMPs in consultation with the applicable agency.

WAT-MM-10. During rail operations, the Coalition shall ensure that all project-related culverts and bridges are clear of debris to avoid flow blockages, flow alteration, and increased flooding. The Coalition shall inspect all project-related bridges and culverts semi-annually (or more frequently, as seasonal flows dictate) for debris accumulation and shall remove and properly dispose of debris promptly.

WAT-MM-11. To address the closing of active groundwater wells and permanent impacts on springs, the Coalition shall consult with the owner, the Utah Division of Water Rights, and the Ute Indian Tribe, as appropriate, to attempt to replace each active well closed with a new well and to mitigate the water rights associated with springs, as practicable.

WAT-MM-12. The Coalition shall consider potential future changes in precipitation patterns caused by climate change when designing surface water crossings (bridges and culverts) and other rail line features.

Biological Resources

BIO-MM-1. The Coalition shall implement appropriate measures to reduce collision risks for birds resulting from project-related power communications towers. The Coalition shall incorporate the design recommendations in the U.S. Fish and Wildlife Service (USFWS) *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning* (USFWS 2018) to avoid or minimize the risk of bird mortality at communications towers.

BIO-MM-2. During project-related construction, the Coalition shall comply with any federal, state, tribal, or local in-water work windows and timing restrictions for the protection of fish species, and other reasonable requirements of in-water work permits issued by UDWR and the Corps.

BIO-MM-3. During project-related construction, the Coalition shall use a bubble curtain or other noise-attenuation method (e.g., wood or nylon pile caps) when installing or proofing pilings below the ordinary high water line of a fish-bearing stream to minimize underwater sound impacts on fish.

BIO-MM-4. During project-related construction, the Coalition shall use a block-net to remove and exclude fish from in-water work areas. The Coalition shall deploy the block-net toward the water from land, with the two ends of the net maintained on shore and the middle portion of the net deployed in the water. Any fish handling, exclusion, and removal operation shall be consistent with any reasonable requirements of in-water permits from UDWR and the Corps.

BIO-MM-5. The Coalition shall minimize, to the extent practicable, the area and duration of project-related construction activities within riparian areas and along streambanks. Where construction activities within riparian areas or along streambanks are unavoidable, the Coalition shall implement appropriate erosion control materials to stabilize soil and reduce erosion. Following the completion of project-related construction on a segment of rail line, the Coalition shall promptly restore and revegetate riparian areas using native vegetation.

BIO-MM-6. The Coalition shall design culverts and bridges to allow aquatic organisms to pass relatively unhindered, to the extent practicable.

BIO-MM-7. The Coalition shall develop and implement a wildfire management plan in consultation with appropriate state, tribal, and local agencies, including local fire departments. The plan shall incorporate specific information about operations, equipment, and personnel on the rail line that might be of use in case a fire occurs and shall evaluate and include as appropriate site-specific techniques for fire prevention and suppression. The plan shall also include a commitment for the Coalition and consulting parties to revisit the plan on a regular basis (e.g., every 5 years; but to be determined during plan development) to determine if environmental conditions have changed (e.g., drier conditions) to the point where aspects of the plan would need to be revised to address those changing conditions.

BIO-MM-8. The Coalition shall protect bald and golden eagles by adhering to the Bald and Golden Eagle Protection Act. In addition, the Coalition shall follow the USFWS *National Bald Eagle Management Guidelines* (USFWS 2007), as applicable.

BIO-MM-9. The Coalition shall comply with the terms and conditions of the USFWS Biological Opinion for the protection of federally listed threatened and endangered plants and animals that could be affected by the rail line, and to ensure compliance with Endangered Species Act Section 7.

BIO-MM-10. The Coalition shall implement the requirements of the Ute Indian Tribe for minimizing impacts on wildlife, fish, and vegetation on Tribal trust lands.

BIO-MM-11. Prior to project-related construction, the Coalition shall acquire and abide by the reasonable requirements of all appropriate federal and state permits to possess, relocate, or disassemble a bald or golden eagle nest, and/or work within 0.5 mile of a bald or golden eagle nest, regardless of whether the nest is active or inactive. The Coalition shall also follow the guidelines for avoiding and minimizing impacts set out in the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* for the protection of bald and golden eagles, as applicable.

BIO-MM-12. Rail employees engaged in routine rail line inspections that observe carcasses along the rail line shall remove carcasses away from the rail line to minimize potential eagle strikes. Carcass data shall be recorded, including species, location, and number, and submitted to UDWR. The Coalition will consult with UDWR to determine the best way to submit this data and the frequency at which it will be transmitted.

BIO-MM-13. The Coalition shall abide by the BLM *Utah Greater Sage-Grouse Approved Resource Management Plan Amendment* for approved Action Alternatives that affect BLM land, and will follow the reasonable requirements of the *Utah Conservation Plan for Greater Sage-Grouse*.

BIO-MM-14. During project-related construction, the Coalition shall employ ecologically sound methods to remove all cleared vegetation and green debris from construction areas, including trees from woodland and timber clearing. On lands managed by federal, state, or tribal agencies, the Coalition shall consult with the appropriate agencies regarding methods for removal of cleared vegetation and green debris and shall implement those agencies' requirements.

BIO-MM-15. Prior to any project-related construction, the Coalition shall consult with the appropriate County Weed Boards/Departments and the Ute Indian Tribe to develop and implement a plan to address the spread and control of nonnative invasive plants during project-related construction. For any construction activities on lands managed by federal, state, or tribal agencies, the Coalition shall seek input on the plan from the appropriate land management agency. The plan shall incorporate the reasonable requirements and recommendations of those agencies and shall identify and address 1) planned seed mixes, 2) weed prevention and eradication procedures, 3) equipment cleaning protocols, 4) revegetation methods, 5) protocols for monitoring revegetation, and 6) ongoing inspection of the rail right-of-way for noxious weeds and invasive species during rail operations.

BIO-MM-16. If the Surface Transportation Board (Board) authorizes the Indian Canyon Alternative or Whitmore Park Alternative, the Coalition shall comply with the reasonable mitigation conditions imposed by the Forest Service in any special use permit allowing the Coalition to cross National Forest System Lands, including complying with the USDA Forest Service Guide to Noxious Weed Prevention Practices and the Ashley National Forest Noxious Weeds Management Supplement.

BIO-MM-17. Prior to any project-related construction, the Coalition shall consult with the Ute Indian Tribe, USFWS, and UDWR to develop and implement a reclamation and revegetation plan for areas that would be temporarily disturbed by construction activities. For any construction activities on lands managed by federal, state, or tribal agencies, the Coalition shall seek input on the plan from the appropriate agency. The reclamation and revegetation plan shall incorporate the reasonable requirements and recommendations of those agencies and shall clearly identify and address 1) the areas to be reclaimed and revegetated; 2) the proposed reclamation and revegetation materials, methods, and timing; and 3) the proposed monitoring schedule and contingency plans.

BIO-MM-18. The Coalition shall not use bird hazing (or scaring) techniques around documented leks in the Carbon SGMA during construction.

BIO-MM-19. The Coalition shall consult with the Ute Indian Tribe, UDWR, OEA, and appropriate land management agencies to develop and implement a big game movement corridor crossing plan. The plan shall address the need for dedicated big game crossings of

the rail line, the need to limit fencing (if applicable), and the need for additional data collection. The plan shall specifically evaluate the use of big game overpasses or underpasses (including standards for design), wildlife friendly fencing, reduced train speeds in high-risk areas, and sound signaling and sound barriers in collision hotspots. The plan shall use the latest available big game movement corridor data from UDWR and the Ute Indian Tribe.

BIO-MM-20. The Coalition shall comply with the provisions of the Final Mitigation Approach and Agreement for Potential Impacts to Greater Sage-grouse executed by the Coalition and UDWR.

Geology, Soils, Seismic Hazards, and Hazardous Waste Sites

GEO-MM-1. The Coalition shall design and construct the rail line to balance cut and fill earthwork quantities, to the extent practicable, in order to minimize the quantities of materials required to be excavated, transported, or placed off site.

GEO-MM-2. The Coalition shall conduct geotechnical investigations to identify soils and bedrock in cut areas with potential for mass movement or slumping. The geologic hazard investigations shall be conducted in accordance with Utah Geological Survey Circular 122. Where appropriate, the Coalition shall implement engineering controls to avoid mass movement or slumping. If mass movement or slumping of soils or bedrock occurs during project-related construction, the Coalition shall promptly institute appropriate remedial actions. The Coalition shall periodically monitor the railbed during operations to identify changes related to use, cumulative effects of weight and vibration, and changes in underlying soils to prevent deterioration from settling, deformation, collapse, and erosion.

GEO-MM-3. The Coalition shall conduct geotechnical investigations to identify areas within the rail right-of-way where soils with high corrosivity to concrete or steel could affect the rail line. The Coalition shall implement appropriate site-specific measures to address the soil corrosivity in areas identified during the geotechnical investigations, potentially including replacing soils with high corrosivity with non-corrosive engineered soils, as applicable. If soil materials are removed and replaced due to corrosivity to steel or concrete, the Coalition shall consult with the appropriate land management agencies to determine the sites for disposal and the appropriate replacement soil materials. All replacement soil materials shall be certified weed-free engineered material, or shall be checked for the presence of weeds and sprayed for weeds to prevent bringing in invasive species.

GEO-MM-4. The Coalition shall conduct geotechnical studies to identify unmapped abandoned mines that could affect the rail line and shall take actions to appropriately stabilize areas where unmapped mines are identified.

GEO-MM-5. The Coalition shall conduct geotechnical investigations to identify areas within the rail right-of-way that are at risk of seismically induced liquefaction. The geologic hazard investigations shall be conducted in general accordance with *Utah Geological Survey Circular 122*. The Coalition shall implement appropriate site-specific measures to minimize

the risk of liquefaction in areas identified during the geotechnical investigations, including replacing soils subject to liquefaction with engineered soils that are not prone to liquefaction, as applicable. If soil materials are removed and replaced due to liquefaction hazards, the Coalition shall consult with the appropriate land management agencies to determine the sites for disposal and the appropriate replacement soil materials. All replacement soil materials shall be certified weed-free engineered material, or shall be checked for the presence of weeds and sprayed for weeds to prevent bringing in invasive species.

GEO-MM-6. The Coalition shall design and construct any tunnels in accordance with applicable OSHA guidelines for underground construction (OSHA 2003). Conformance shall include ventilation, air monitoring, and emergency procedures.

GEO-MM-7. In consultation with applicable land management agencies and other agencies with expertise in avalanche mitigation, the Coalition shall identify areas with a high risk of snow slab avalanche that have the potential to affect the rail line and investigate the use of nonstructural and structural methods to control the effects of slab avalanches. Nonstructural methods can include triggering and closures. Structural methods can include avalanche dams and retarding structures, starting zone structures, and avalanche sheds.

GEO-MM-8. Prior to construction, the Coalition shall conduct geophysical investigations to identify risks associated with the Duchesne-Pleasant Valley fault that could affect the rail line.

Noise and Vibration

NV-MM-1. Before undertaking any project-related construction activities, the Coalition shall, with the approval of OEA and in consultation with appropriate tribal and local agencies, develop and implement a construction noise and vibration control plan to minimize project-related construction noise and vibration affecting residences along the rail line, including noise and vibration from general construction equipment, specialized equipment, and tunnel construction. For tunnel construction in particular, the plan shall include estimates of construction noise and vibration levels and identify measures that shall be taken if predicted construction noise or vibration levels exceed Federal Transit Administration (FTA) criteria. The Coalition shall also conduct noise and vibration monitoring for receptors that would exceed FTA criteria. The Coalition shall designate a noise control officer to develop the construction noise and vibration plan, whose qualifications shall include at least 5 years of experience with major construction noise projects, and board certification from the Institute of Noise Control Engineering or registration as a Professional Engineer in Mechanical Engineering or Civil Engineering.

NV-MM-2. The Coalition shall minimize, to the extent practicable, construction-related noise disturbances in residential areas. The Coalition shall avoid nighttime construction and pile-driving near residential areas and employ quieter vibratory pile-driving or noise curtains for project-related construction where FTA construction noise criteria are exceeded.

NV-MM-3. In consultation with OEA and appropriate tribal and local agencies, the Coalition shall employ reasonable and feasible noise mitigation for receptors that would experience noise impacts at or greater than the regulatory analytical threshold of 65 day-night average sound level (DNL) and an increase of 3 A-weighted decibels (dBA). The design goal for noise mitigation shall be a 10 dBA noise reduction. Using industry standard loudspeaker testing, the building sound insulation performance shall be determined in accordance with ASTM 966-90, Standard Guide for Field Measurements of Airborne Sound Insulation of Building Facades and Façade Elements. The calculated noise reduction shall be at least 5 dBA. Should the calculated noise reduction be less than 5 dBA then no mitigation is warranted as the receptor has sufficient sound insulation.

NV-MM-4. The Coalition shall install and properly maintain rail and rail beds on the rail line according to American Railway Engineering and Maintenance of Way Association standards and shall regularly maintain locomotives, keeping mufflers in good working order to control noise. The Coalition shall install rail lubrication systems at curves along the rail line where doing so would reduce noise associated with wheel squeal for residential or other noise-sensitive receptors. The Coalition shall regularly inspect and maintain rail car wheels on trains that operate on the rail line in good working order and minimize the development of wheel flats (where a round wheel is flattened, leading to a clanking sound when a rail car passes).

Air Quality

AQ-MM-1. In consultation with the TriCounty Health Department and the Ute Indian Tribe as applicable, the Coalition shall implement appropriate fugitive-dust controls such as spraying water or other dust treatments to reduce fugitive-dust emissions created during project-related construction activities. During project-related construction, the Coalition shall ensure that construction contractors offer workers daily transportation to the work site from a central location to minimize vehicular traffic on unpaved roads in the area and thereby reduce exhaust emissions and fugitive dust.

AQ-MM-2. The Coalition shall ensure that all engine-powered equipment and vehicles used in construction, operation, and maintenance of the rail line are subject to a regular inspection and maintenance schedule in order to minimize air pollutant emissions, greenhouse gas emissions, and fuel consumption. Preventive maintenance activities shall include, but shall not be limited to, the following actions:

- Replacing oil and oil filters as recommended by manufacturer instructions.
- Maintaining proper tire pressure in on-road vehicles.
- Replacing worn or end-of-life parts.
- Scheduling routine equipment service checks.

AQ-MM-3. The Coalition shall develop and implement an anti-idling policy for both rail construction and operations and ensure that equipment operators receive training on best practices for reducing fuel consumption to reduce project-related air emissions. The anti-idling policy shall include required warm-up periods for equipment and prohibit idling beyond these periods. The policy shall define any exceptions where idling is permitted for

safety or operational reasons, such as when ambient temperatures are below levels required for reliable operation. In addition, the policy shall include provisions addressing the use of technologies such as idle management systems or automatic shutdown features, as appropriate.

AQ-MM-4. During project-related construction, the Coalition shall require that construction contractors use renewable diesel fuel to minimize and control greenhouse gas emissions from diesel-fueled construction equipment and on-road diesel trucks, to the extent practicable. Renewable diesel refers to biofuel that is chemically identical to diesel derived from petroleum, meets the most recent ASTM D975 specification for Ultra Low Sulfur Diesel, and has a carbon intensity no greater than 50 percent of traditional diesel. If the Coalition believes that renewable diesel is not available at a reasonable price from suppliers within 200 miles of the construction site, the Coalition may request an exemption from OEA to instead require construction contractors use traditional diesel fuel with the highest biodiesel content reasonably available. The Coalition shall document the availability and price of renewable diesel to meet project demand in consultation with OEA.

AQ-MM-5. The Coalition shall consider procuring alternative engine and fuel technologies, e.g., hybrid-electric diesel equipment, for construction and operation of the rail line to reduce greenhouse gas emissions.

AQ-MM-6. The Coalition shall evaluate the feasibility of installing solar and wind microgeneration technologies on site offices, lodgings, and other project-related facilities to reduce the use of grid or privately generated electricity to reduce greenhouse gas emissions. As part of its evaluation, the Coalition shall consider the suitability of site conditions and location of solar and wind generation and the technical and economic feasibility of supplementing site electricity demands with renewable power.

AQ-MM-7. The Coalition shall post signage and/or fencing during project-related construction, including tunnel construction, to ensure that members of the public would be unable to enter areas within the construction easement that could experience temporary adverse air quality impacts.

AQ-MM-8. To the extent practicable, the Coalition shall avoid conducting project-related construction activities that could result in the emission of ozone precursors within the Uinta Basin Ozone Nonattainment Area in January and February to minimize emissions of ozone precursor chemicals in the nonattainment area. Construction-related activities covered by this measure include the use of diesel-powered construction equipment and the transportation by truck of materials to construction sites. If the Coalition believes that project-related construction activities that could result in the emission of ozone precursors in the Uinta Basin Ozone Nonattainment Area during January and February cannot practically be avoided during one or more years of the construction period, the Coalition shall consult with OEA and UDEQ's Air Quality Division to identify and implement other appropriate ozone-reduction activities for those months.

Energy

ENGY-MM-1. The Coalition shall design any project-related road realignments to allow continued vehicle access to existing fixed energy facilities, such as oil pads, during and following construction of the rail line. The Coalition shall work with the owners of the energy facilities to coordinate continued access during construction and rail operations.

ENGY-MM-2. The Coalition shall ensure that any oil and gas-producing wells within the rail right-of-way are plugged and abandoned in accordance with Utah Administrative Code Rule R649-3-24, Plugging and Abandonment of Wells. The Coalition shall consult with the Utah Division of Oil, Gas, and Mining prior to undertaking any construction activities that could affect existing wells and shall follow that agency's reasonable recommendations regarding appropriate safety procedures for the abandonment of wells.

ENGY-MM-3. The Coalition shall design any crossings or relocations of pipelines or electrical transmission lines in accordance with applicable Utah Division of Public Utilities' regulations and guidelines. The Coalition shall consult with appropriate utility providers to develop a plan to ensure that construction activities that could affect existing electrical transmission lines or energy pipelines avoid any interruption of utility service to customers to the extent possible.

ENGY-MM-4. The Coalition shall consult with oil and gas operators of existing facilities (e.g., wells, well pads, gathering pipelines, access roads) that would be affected by construction and operation of the rail line during the final engineering and design phase for the rail line and prior to undertaking project-related construction activities to develop appropriate measures to mitigate impacts on these facilities. These measures may include, but are not limited to, adjusting the location of construction activities to avoid oil and gas facilities or relocating the facilities if impacts cannot be avoided during construction and operations.

Paleontological Resources

PALEO-MM-1. The Coalition shall contract with a qualified paleontologist to develop and implement a paleontological resources monitoring and treatment plan to mitigate potential impacts on paleontological resources on lands classified as Potential Fossil Yield Classification 3, 4 or 5. The plan shall include the following requirements:

A preconstruction survey where appropriate to describe and recover paleontological resources found on the surface.

Monitoring of ground-disturbing activities during construction to recover paleontological resources, including inspection of spoils piles created by tunnel construction.

Identification, preparation, and documentation of fossils collected during surveys or monitoring.

Curation and deposition of significant paleontological resources into a federally approved repository.

Increasing public awareness about the scientific importance of paleontological resources by developing web-based education material, interpretive displays, or other means.

Land Use and Recreation

LUR-MM-1. The Coalition shall consult with the Ute Indian Tribe during the final engineering and design phase of the rail line and prior to undertaking any project-related construction to ensure that construction and operation of the rail line would not significantly impact land uses on land under the tribe's jurisdiction.

LUR-MM-2. The Coalition shall implement any mitigation measures imposed by the Ute Indian Tribe as a condition of a right-of-way across Tribal trust lands.

LUR-MM-3. If the Indian Canyon Alternative or the Wells Draw Alternative is authorized by the Board, the Coalition shall adhere to the reasonable mitigation conditions imposed by BLM in any right-of-way granted by BLM allowing the Coalition to cross BLM lands and shall ensure that construction and operation of the rail line is in compliance with applicable Resource Management Plans, including any potential amendments to those plans, for BLM lands that the rail line would cross.

LUR-MM-4. If the Indian Canyon Alternative or the Whitmore Park Alternative is authorized by the Board, the Coalition shall adhere to the reasonable mitigation conditions imposed by the Forest Service in any special use permit allowing the Coalition to cross National Forest System Lands. These reasonable mitigation conditions may include identifying areas where use and storage of petroleum products, herbicides, and other hazardous materials should be avoided during construction and operation. Conditions may also include avoiding or minimizing impacts on horse pastures to maintain adequate pasture size and replacing pasture fences removed during construction, as determined appropriate through consultation with the Forest Service. The Coalition shall consult with the Forest Service to ensure that construction and operation of the rail line complies with *Ashley Forest Land and Resource Management Plan*, including any existing or potential amendments to that plan, and with the Forest Service 2001 Roadless Rule.

LUR-MM-5. The Coalition shall adhere to the reasonable mitigation conditions imposed by the State of Utah School and Institutional Trust Lands Administration (SITLA) in any right-of-way grant allowing the Coalition to cross SITLA lands.

LUR-MM-6. If the Indian Canyon Alternative or the Whitmore Park Alternative is authorized by the Board, the Coalition shall obtain a right-of-way from the U.S. Bureau of Indian Affairs (BIA) to cross Tribal trust lands and shall implement the reasonable terms and conditions imposed by BIA in any decision granting a right-of-way on Tribal trust lands.

LUR-MM-7. Prior to project-related construction, the Coalition shall consult with BLM, the Forest Service, the Ute Indian Tribe, SITLA, and local agencies as appropriate, to develop a plan to limit, to the extent practicable, impacts on recreational resources under those agencies' management or jurisdiction, including roads used for recreation and recreational site access. The Coalition shall also consult with private landowners to develop appropriate measures to mitigate impacts on land uses and recreational activities on private land. The

Coalition shall develop the plan prior to completing the final engineering plans for the rail line and following the above-mentioned consultation to determine the location of all public roads used as access points to a recreation area that would be crossed by the rail line. The plan shall designate temporary access points if main access routes must be obstructed during project-related construction. The plan shall also include the number and location of access points as decided during consultation with the applicable agencies.

LUR-MM-8. The Coalition shall coordinate with owners of properties used for recreation during project-related right-of-way acquisition negotiations to provide adequate private road at-grade crossings to ensure that recreationists maintain access to and movement within recreational properties and areas. The Coalition shall coordinate with UDWR, the Ute Indian Tribe, SITLA, BLM, and the Forest Service, as appropriate, to develop reasonable measures to maintain access to hunting and recreation access points.

LUR-MM-9. The Coalition shall consult with appropriate land management agencies to develop appropriate measures to mitigate impacts of construction and operation of the rail line on grazing allotments on public lands. These measures could include improving forage production in other areas of affected allotments through implementation of vegetation treatment projects, including sagebrush reduction treatments and/or seedings, to increase forage production and maintain preconstruction carrying capacity.

LUR-MM-10. The Coalition shall install cattle guards, livestock exclusion fencing, or other design features, as appropriate, within grazing areas along the rail line to prevent livestock from entering rail tunnels or congregating at tunnel entrances or in other areas in the rail right-of-way that could be hazardous to livestock. The Coalition shall work with landowners and land management agencies, as applicable, to identify appropriate locations for cattle guards, fencing, and other design features and to plan for ongoing maintenance of any of these features.

LUR-MM-11. The Coalition shall consider installing cattle underpasses along the right-of-way, as appropriate and practical. These underpasses could also be used by wildlife. The Coalition shall work with landowners to identify appropriate locations for cattle passes.

LUR-MM-12. The Coalition shall coordinate with landowners and holders of conservation easements crossed by the rail line to develop appropriate measures to mitigate impacts of construction and operation of the rail line on affected conservation easements.

Visual Resources

VIS-MM-1. The Coalition shall install visual barriers, as appropriate, to obstruct views of project-related construction activities and to maintain the privacy of adjacent landowners.

VIS-MM-2. The Coalition shall direct nighttime lighting, if used during construction, onto the immediate construction area during project-related construction to minimize impacts from shining lights on sensitive viewers, sensitive natural resource areas, recreational areas, and roadway or trail corridors.

VIS-MM-3. During project-related construction, the Coalition shall grade contours to create slopes with undulations and topographical variations that mimic natural terrain, where possible. If this grading practice results in larger areas of cut or fill that would further degrade natural features of scenic value, the Coalition shall not implement this measure at those locations. For example, a steeper cut slope may be more desirable than removing many trees to create more rounded terrain. The Coalition shall grade and restore roadbeds that are abandoned because of roadway relocation due to project-related construction to mimic the adjacent natural landscape and revegetate the roadway surface.

VIS-MM-4. The Coalition shall design bridges, communications towers, and other project-related features to complement the natural landscape and minimize visual impacts on the landscape. To the extent practicable, the Coalition shall use paint colors that are similar to colors in the surrounding landscape and shall implement design features that mimic natural materials (e.g., stone or rock surfacing) and colors to reduce visibility and to blend better with the landscape.

VIS-MM-5. If the Board authorizes construction and operation of the Indian Canyon Alternative or Whitmore Park Alternative, the Coalition shall implement the reasonable requirements of any Forest Service decision permitting the rail line within Ashley National Forest and shall ensure that construction and operation on National Forest System lands complies with the requirements for visual resources management in *Ashley National Forest Land and Resource Management Plan*, including any potential amendments to that plan.

VIS-MM-6. If the Board authorizes the Indian Canyon Alternative or the Wells Draw Alternative, the Coalition shall consult with BLM during all phases of project design to ensure that construction and operation of the rail line on BLM lands would be in compliance with all applicable BLM Visual Resource Management requirements and procedures. The Coalition shall incorporate visual design considerations into the design of the rail line on BLM lands; undertake additional visual impact analyses on BLM lands, as appropriate, in consultation with BLM and considering applicable BLM Visual Resources Inventories; and implement appropriate measures to mitigate visual impacts on BLM lands, as requested by BLM.

VIS-MM-7. If the Board authorizes the Indian Canyon Alternative or the Wells Draw Alternative, the Coalition shall, in consultation with BLM, implement appropriate additional measures to minimize light pollution on BLM lands, potentially including limiting the height of light poles, limiting times of lighting operations, limiting wattage intensity for lighting, and constructing light shields, as applicable.

VIS-MM-8. The Coalition shall implement the requirements of the Ute Indian Tribe regarding the design of the rail line on Tribal trust lands for minimizing visual disturbances to Tribal trust lands.

Socioeconomics

SOCIO-MM-1. The Coalition shall negotiate compensation—for direct loss of agricultural land in the right-of-way and the indirect loss of agricultural land from severance—with each landowner whose property would be affected by construction and operation of the rail line, consistent with applicable state law. The Coalition shall assist landowners in developing alternative agricultural uses for severed land, where appropriate. The Coalition shall apply a combination of alternative land use assistance and compensation as agreed upon during right-of-way negotiations, pursuant to state law. Where capital improvements are displaced by construction or operation of the rail line, the Coalition, in consultation with the landowner and relevant agencies, such as water districts or the local Natural Resources Conservation Services office, shall relocate or replace these improvements or provide appropriate compensation based on the fair market value of the capital improvements being displaced, consistent with applicable state law.

SOCIO-MM-2. The Coalition shall consult with landowners to limit the loss of access to properties during rail construction. The Coalition also shall consult with landowners to determine the location of property access roads that would be crossed by the rail line. The Coalition shall install temporary property access points for landowner use if main access routes must be obstructed during project-related construction. The Coalition shall coordinate with landowners while negotiating the railroad right-of-way easement to identify key access points that would be affected by construction and operation of the rail line. The Coalition shall install at-grade crossings and relocate roads to maintain adequate access to and movement within properties after rail operations begin.

Environmental Justice

EJ-MM-1. The Coalition shall consult with the Ute Indian Tribe regarding potential impacts on the Pariette cactus and Uinta Basin hookless cactus and shall abide by the requirements of the tribe's Sclerocactus Management Plan and the tribe's other requirements and recommendations for project-related activities on Tribal trust lands, which may include soil assessments, complying with mitigation measures to be developed in consultation with the tribe, and contributing to a conservation mitigation fund, as appropriate.

EJ-MM-2. The Coalition shall consult with the Ute Indian Tribe regarding the final design of the rail line, including the locations and designs of rail-related features, such as sidings, communications towers, culverts, bridges, and warning devices, to ensure that impacts on tribal members and land and resources under the tribe's jurisdiction are minimized.

Monitoring and Compliance

MC-MM-1. The Coalition shall submit quarterly reports to OEA on the progress of, implementation of, and compliance with all Board-imposed mitigation measures. The reporting period for these quarterly reports shall begin on the date of the Board's final decision authorizing the project until 1 year after the Coalition has completed project-related construction activities. The Coalition shall submit copies of the quarterly reports within

30 days following the end of each quarterly reporting period and distribute the reports to appropriate federal, state, local, and tribal agencies, as specified by OEA.

EXHIBIT B**List of Respondents and Parties**

(party addresses from service list for Surface Transportation Board Docket
F.D. 36284 as of Feb. 10, 2022)

Craig Keats, General Counsel
Office of General Counsel
Surface Transportation Board
395 E Street, SW
Washington DC 20423

*Counsel for Surface Transportation
Board, Respondent*

Martha Williams, Principal Deputy
Director
U.S. Fish & Wildlife Service
1849 C St., NW
Washington, DC 20240

Respondent

Kathryn Kusske Floyd
Margaret K. Fawal
Venable, LLP
600 Massachusetts Avenue NW
Washington, DC 20001

*Counsel for Seven County
Infrastructure Coalition*

The Hon. Merrick Garland
Attorney General of the United States
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001

Matthew M. Graves, U.S. Attorney
for the District of Columbia
United States Attorney's Office
555 4th Street, NW
Washington, DC 20530
*Counsel for the United States,
Respondent*

Darrell Fordham
Argyle Wilderness Preservation
Alliance
511 South 600 East
Lehi, UT 84043

Thomas F. McFarland, Esq.
Law Office of Thomas F. McFarland
208 South LaSalle Street, Suite 1666
Chicago, IL 60604-1228

*Counsel for Argyle Wilderness
Preservation Alliance*

Charles A. Spitulnik
Kaplan Kirsch
1634 I (Eye) Street, NW, Suite 300
Washington, DC 20006

Nathan Hunt
Kaplan Kirsch
1675 Broadway, Suite 2300
Denver, CO 80202

Counsel for Eagle County, Colorado

Julie Mach
419 H Street
Salida, CO 81201

P.T. Wood
448 E 1st Street
Salida, CO 81201

Alan H. Robinson
33700 Mt. Harvard Circle
Buena Vista, CO 81211

Edred Secakuku, Vice Chair
Ute Indian Tribe Business Committee
Ute Indian Tribe of the Uintah &
Ouray Reservation
P.O. Box 190
Fort Duchesne, UT 84026

EXHIBIT C

U.S. Fish & Wildlife Service Decision on Review



United States Department of the Interior

FISH AND WILDLIFE SERVICE
2369 West Orton Circle, Suite 50
West Valley City, Utah 84119



In Reply Refer to:
FWS/IR05/IR07
06E23000-2020-F-0871

Ms. Danielle Gosselin
Acting Director
Surface Transportation Board
Washington, DC 20423

Subject: Conclusion of formal section 7 consultation for the Seven County Infrastructure Coalition – Uinta Basin Railway project proposal

Dear Ms. Gosselin,

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402), this transmits our final biological opinion (BO) based on review of the Surface Transportation Board's (STB) proposed Uinta Basin Railway project (hereafter, Project). Our BO evaluates Project effects to Ute ladies'-tresses (*Spiranthes diluvialis*), Pariette cactus (*Sclerocactus brevispinus*), Uinta basin hookless cactus (*Sclerocactus wetlandicus*), and Barneby ridge-cress (*Lepidium barnebyanum*). In addition, our BO evaluates project effects associated with water depletions in the upper Colorado River basin to the Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*) (collectively referred to as Colorado River fishes) and their designated critical habitats. Our BO is based on information provided in communication between our agencies via email, meetings, phone, your March 18, 2021 request for formal consultation, and your biological assessment (BA) (see Consultation History, below). A complete administrative record of this consultation is on file at the U.S. Fish and Wildlife Service (USFWS) Utah Field Office.

Canada Lynx (*Lynx canadensis*) and Mexican spotted owl (*Strix occidentalis lucida*) were also analyzed as part of the Biological Assessment (BA), and we concur with your determination of may affect, not likely to adversely affect for these two species. Our concurrence for Canada lynx is based upon the absence of high-quality habitat in the action area, the disjunct nature of the marginal habitat that is present, the absence of historic observations in the action area, and the fact that the U.S. Forest Service considers the area to be unoccupied by the species. Our concurrence for Mexican spotted owl is based upon the absence of high-quality habitat in the

INTERIOR REGION 5 MISSOURI BASIN

KANSAS, MONTANA*, NEBRASKA, NORTH DAKOTA,
SOUTH DAKOTA

*PARTIAL

INTERIOR REGION 7 UPPER COLORADO RIVER BASIN

COLORADO, NEW MEXICO, UTAH, WYOMING

action area, that the majority of habitat in the action area is considered low-quality, that the species has not been observed within in a 2-mile (mi) distance of the action area, and the commitment by the STB to implement species-specific conservation measures. As stated in the BA, this includes conducting Mexican spotted owl surveys in the moderate-quality habitat located along the Wells Draw Alternative. The Project does not affect critical habitat for Canada lynx or Mexican spotted owl.

Upper Colorado Endangered Fish Recovery Program

Water depletions from the Upper Colorado River Basin are likely to adversely affect the Colorado River fishes and their designated critical habitat through multiple ecological stressors, such as habitat loss, competition from nonnative fish, and degraded water quality. Because water depletions from the Upper Colorado River Basin are a major factor in the decline of the endangered fishes, historically we determined that any depletion will jeopardize their continued existence and will likely contribute to the destruction or adverse modification of their critical habitat (USFWS 1997).

To address the ecological effects from water depletions and aid in the recovery of the four species, the Department of the Interior, the States of Wyoming, Colorado, and Utah, and the Western Area Power Administration established the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) in 1988. The objective of the Recovery Program is to recover the listed species while water development continues in accordance with Federal and State laws and interstate compacts.

The Recovery Program participants implemented an agreement under section 7 (Agreement) on October 15, 1993 to further define and clarify the process for addressing water depletion impacts. This Agreement established the Recovery Program and its activities as the reasonable and prudent alternative (RPA) for impacts to Colorado River fishes caused by depletions from the Upper Colorado River Basin. Incorporated into this Agreement is a plan of actions (Recovery Implementation Program Recovery Action Plan or RIPRAP) that identifies activities required to recover the endangered fishes to be carried out by Recovery Program participants. Also incorporated into the Agreement is the requirement of a financial contribution to the Recovery Program (also known as a depletion fee) that would help fund recovery activities. We use procedures outlined in the Agreement to determine if sufficient progress is being accomplished in the recovery of the endangered fishes to enable the Recovery Program to continue to serve as a reasonable and prudent alternative to avoid jeopardy. We finalized the RIPRAP on October 15, 1993 and have reviewed and updated the plan annually.

In accordance with the 1993 Agreement, we annually assess progress of the implementation of recovery actions to determine if progress toward recovery is sufficient for the Recovery Program to serve as an RPA for projects that deplete water from the Colorado River Basin. In the last review, we determined that the Program made sufficient progress to offset water depletions from individual projects up to 4,500 acre-feet/year. Therefore, it is appropriate for Recovery Program activities to serve as conservation measures for projects up to 4,500 acre-feet/year.

After many years of successful implementation of the Recovery Program, the Agreement, and the RIPRAP, federal action agencies now anticipate Recovery Program activities and payment of the depletion fee to serve as the RPA. Thus, the RPA has essentially become part of a Proposed Action. Because we now consider it part of a Proposed Action, the depletion fee and Recovery Program activities now serve as conservation measures that minimize adverse effects to listed species or critical habitat. Therefore, we no longer consider depletions to jeopardize the continued existence of these species, but rather believe that depletions may affect and are likely to adversely affect the species, and that the Recovery Program activities will now serve as conservation measures within the Proposed Action and minimize adverse effects to listed species or critical habitat.

As mentioned above, included in the Recovery Program was the requirement that a depletion fee would be paid by Project applicants to help support the Recovery Program. On July 8, 1997, we issued an intra-Service biological opinion determining that depletion fees for average annual depletions of 100 acre-feet or less are no longer required due to sufficient progress on the recovery of Colorado River fishes. The estimated water depletion for this Project is 875 acre-feet per year. Therefore, a depletion fee is required for this Project.

CONSULTATION HISTORY

- **April 10, 2019.** We received a letter from your office requesting preliminary comments on the proposed rail line and concurrence with STB's preliminary list of ESA-listed species to consider for the proposed rail line.
- **August 1, 2019.** The U.S. Department of Interior's Office of Environmental Policy and Compliance responded to STB's Notice of Intent (NOI) to prepare an EIS and provided comments on behalf of our office. Our office concurred with STB's list of ESA-listed species to consider and reminded STB that it must consult with our office under Section 7 of the ESA should the proposed rail line affect ESA-listed species or designated critical habitat.
- **February 18, 2020.** STB and Office of Environmental Review's third-party consultant (ICF) held a teleconference with biologists from our office to discuss the proposed rail line, ESA-listed species potentially affected by the proposed project, potential survey needs for ESA-listed species, and development of the BA.
- **May 21, 2020.** STB and ICF held a teleconference with our office biologists to discuss potential survey needs and methods for assessing ESA-listed plants, Mexican spotted owl, and Canada lynx.
- **June 10, 2020.** STB and ICF held a teleconference with our office biologists to follow up on the May 21, 2020 call to resolve issues related to fieldwork and BA content to adequately complete Section 7 consultation.
- **September 1, 2020.** We received a preliminary draft BA from the STB including supporting information, fieldwork reports prepared by the Project applicants, and a request for review and comment.
- **September 14, 2020.** We had a teleconference with STB and ICF to review preliminary comments on the draft BA.
- **October 6, 2020.** Endangered Species Action Section 7 conference call between USFWS, STB, ICF, and the Corps. We discussed the project description and cumulative effects.

- **October 6, 2020 through March 16, 2021.** A biweekly teleconference call was scheduled and staff from our office attended as schedules allowed. This call included staff from our office, STB, ICF, and cooperating and consulting agencies to discuss potential revisions to the draft BA, and coordinate Section 7 consultation for all federal actions and decisions related to the proposed rail line.
- **March 3, 2021.** Endangered Species Act Section 7 conference call between USFWS, STB, ICF, and the Corps. We discussed the project description and cumulative impacts (i.e., how to treat rail terminals).
- **March 11, 2021.** We had a teleconference call with STB and the Corps to discuss the project description and cumulative effects.
- **March 15, 2021.** We had a teleconference call with STB, UDWR, and the Project applicants to discuss mitigation options for the Barneby ridge-cross.
- **March 16, 2021.** We had a teleconference call with STB about the forthcoming revisions to Barneby ridge-cross range maps and habitat descriptions.
- **March 18, 2021.** We received the final BA and request for consultation.
- **July 19, 2021.** We notified the STB via email that the BO will not be completed by the time the final EIS is published on August 6, 2021. We requested an extension to the BO deadline.
- **August 11, 2021.** We had a phone call with STB to discuss a deadline for the BO.
- **August 24, 2021.** We had a phone call with STB and Project applicants who agreed to a deadline of September 20, 2021 for the BO.
- **September 10, 2021.** We received an email with revisions to the conservation measures proposed by the Project applicants and approved by STB.
- **September 10, 2021.** We received preliminary results from plant surveys from the Project applicants' consultant, HDR.

BIOLOGICAL OPINION

1 PROPOSED ACTION

The Seven County Infrastructure Coalition (Project applicants; Coalition) seeks a permit from the STB to construct, operate, and maintain a new rail line in Carbon, Duchesne, Uintah, and Utah Counties, Utah. The Coalition is a political subdivision of the State of Utah established under an inter-local agreement by the Utah counties of Carbon, Daggett, Duchesne, Emery, San Juan, Sevier, and Uintah. The proposed rail line will provide a new rail connection between the Uinta Basin in northeastern Utah and the existing interstate freight rail network near Kyune, Utah. The proposed rail line is approximately 85 miles long, with the exact length dependent on the final route approved by the STB. There are three alternative routes proposed for the rail line, Indian Canyon, Wells Draw, and Whitmore Park. The Whitmore Park route is the Coalition's preferred alternative and is the alternative carried forward for evaluation in this BO.

The Whitmore Park route is 88 mi long from terminus points in the Uinta Basin near Myton and Leland Bench to an existing Union Pacific rail line near Kyune, Utah (Figure 1). The Whitmore Park Alternative will cross 12 mi of National Forest Service land within Ashley National Forest, 8.1 mi of Ute Indian Tribe trust lands in the Uintah and Ouray Reservation, with the remaining length occurring on State of Utah and private lands. The Project will result in the use of 875 acre-feet of water from existing water rights within the Upper Colorado River Basin.

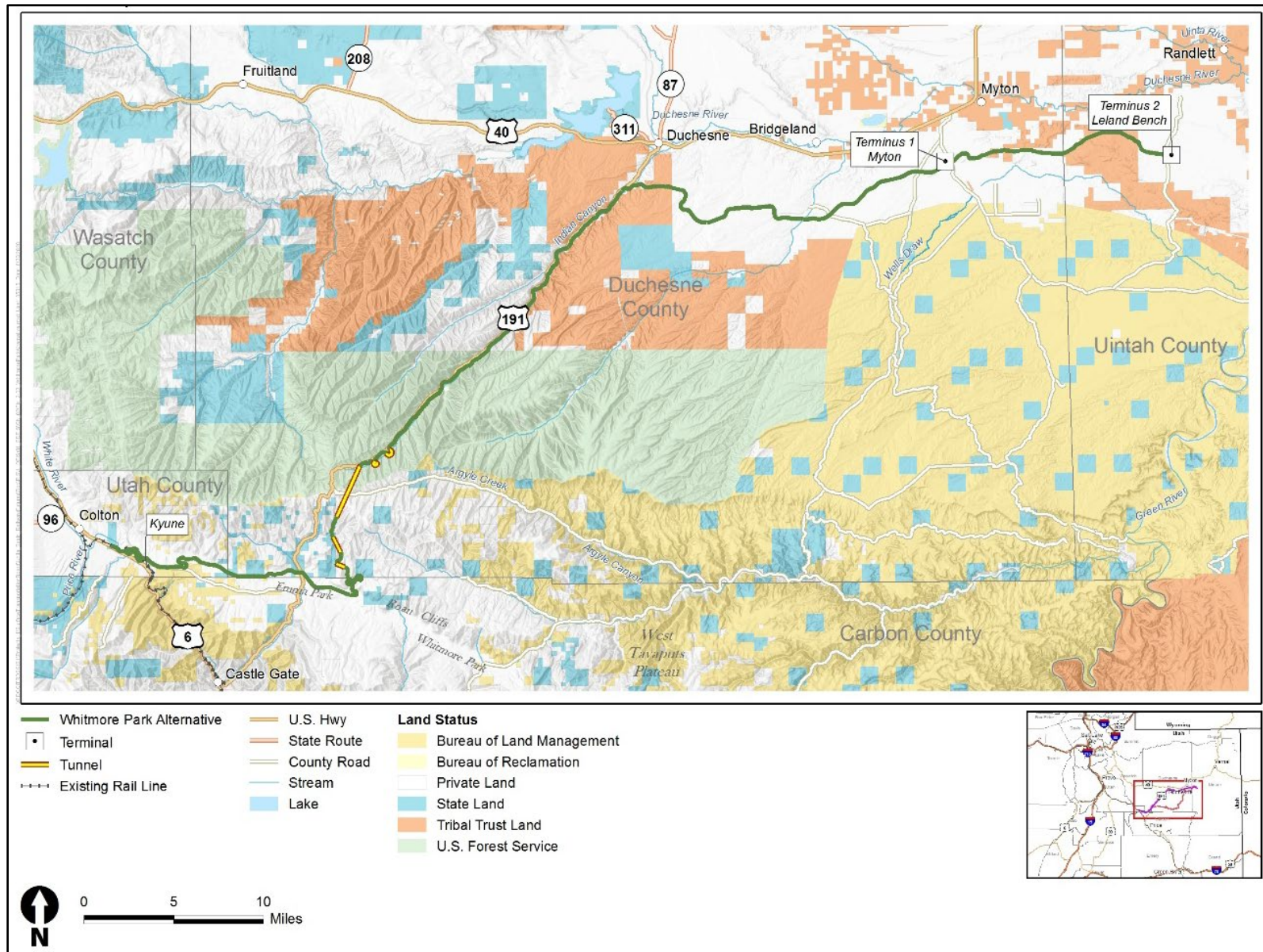


Figure 1. Whitmore Park Alternative Route (STB 2021).

Completion of the proposed Project will depend on additional approval from the U.S Forest Service, Ute Indian Tribe, Bureau of Indian Affairs, State of Utah, and private landowners. If approved, construction is proposed to begin in 2022 and last for up to 28 months. The Project includes the following activities and temporary and permanent facilities:

- construction of the rail bed and track,
- siding and set-out tracks,
- access roads,
- staging areas,
- temporary worker housing,
- tunnels,
- bridge and road relocations,
- culverts,
- stream crossings,
- fence lines,
- communication towers, and
- power distribution lines.

1.1 Project Construction

The following terms describe the areas where construction and operation of the proposed rail line would occur.

- Rail line footprint. The rail line footprint includes the permanent area of the rail bed and track, as well as the full width of the area cleared and cut or filled. The rail line footprint will include other physical structures installed as part of the proposed rail line, such as siding and set-out tracks, access roads, tunnels, culverts, fence lines, communications towers, siding tracks, relocated roads and bridges, and power distribution lines. The rail line footprint is approximately 1,430.6 acres (ac) which will be permanently disturbed and where rail line operations and maintenance will occur (Table 1).
- Temporary footprint. The temporary footprint is the area that could be temporarily disturbed during construction, including areas for temporary material laydown, staging, and logistics. The temporary footprint is approximately 3,087.7 ac which will be disturbed during construction and reclaimed and revegetated following construction (Table 1).
- Project footprint. The project footprint is approximately 4,518.3 ac that combines the areas of the rail line footprint and temporary footprint of the Project (Table 1).

Table 1. Project Length and Footprint

Alternative	Length (miles)	Rail Line Footprint (acres)	Temporary Footprint (acres)	Project Footprint (acres)
Whitmore Park (Proposed Action)	87.7	1,430.6	3,087.7	4,518.3

The Project applicants will either purchase the land or obtain easements for the entire project footprint. However, only the rail line footprint will be permanently cleared of vegetation for construction and operation of the proposed rail line.

The Proposed Action will require constructing temporary and permanent access roads. The Project applicants will construct temporary access roads that will provide access to the rail embankment, tunnel portals, and bridge and drainage structure locations during construction. The Project applicants will construct several permanent access roads to provide access to rail sidings and long tunnels during rail operations. The temporary and permanent access roads will be 13 feet (ft) wide on average and will connect to the nearest existing roadways to minimize the length of the access roads.

The width of the rail line footprint will vary depending on site-specific conditions, such as topography, soil slope stability, and other geotechnical conditions. Under the Proposed Action, the width of the railbed will extend approximately 10 to 20 ft from the centerline to the edge of the subballast. This distance will vary in cut-and-fill locations where ditches could be required. The Project applicants will construct the track on top of approximately 12 inches (in) of subballast material and 8 in of ballast. Timber, steel, or concrete ties will support the continuously welded steel rail.

Construction of the Proposed Action will involve a variety of construction methods and equipment. Bull dozers, front-end loaders, and dump trucks will be used to create the appropriate corridor and grade. Cranes may be needed to construct bridges over roads and surface waters. Mining and potentially blasting methods would be used to construct tunnels. Rail will be laid and welded by track welding machine or crews where necessary. The Project applicants will use existing, permanent quarries located in Carbon, Duchesne, Uintah, and Utah Counties to obtain and stockpile aggregate and rock materials and acquire concrete aggregate and subballast material from existing Utah Department of Transportation (UDOT)-certified quarries and ballast material from an existing rail-served quarry near Milford, Utah. Trucks will deliver the materials to the rail line using existing roadways and temporary and permanent access roads.

The proposed rail line and associated access roads and road relocations will require 30 rail bridges, one road bridge, and 423 culverts to cross streams, rivers, drainages, and existing roadways. Construction of the proposed rail line will require 55 realignments of stream segments totaling 3.8 mi of stream bed to accommodate permanent project features. The proposed rail line will require five tunnels totaling 5.7 mi to traverse mountainous terrain. The proposed rail line will require relocating 71 existing public and private roads totaling 13.8 mi. Finally, the proposed rail line will consist of a single main track with sidings to enable trains to meet or pass. Siding tracks will add 15 to 20 ft to the width of the track structure and the Proposed Action will require an estimated nine sidings totaling 18.0 mi in length.

The Proposed Action will require power distribution lines for signals, communications, and safety equipment. The Project applicants will determine the exact locations of power distribution lines during detailed design following the conclusion of the Board's environmental review process. Any needed power distribution lines will be constructed within the rail line footprint and will connect to existing lines adjacent to the rail line footprint. In more remote or

inaccessible locations, the Proposed Action will use solar-powered equipment for power needed for communications towers and remote grade crossings requiring active warning devices.

The proposed rail line will require the construction of four permanent communications towers. Each tower site will be approximately 0.5 ac in area and approximately 120 ft high, though the exact height would depend on final design details. The Project applicants will construct permanent access roads to provide access to the communications towers for maintenance.

1.2 Project Operation and Maintenance

Following construction of the proposed rail line, Rio Grande Pacific Corporation will operate the proposed rail line. The Project applicants anticipate shippers will primarily use the proposed rail line to transport crude oil using trains composed of 110 tank cars each, on average. Other items transported on the proposed rail line could also include frac sand (sand injected into oil wells) and other commodities. Each train will be powered by approximately eight 4,300- to 4,400-horsepower locomotives. The STB defined two reasonably foreseeable scenarios for future rail traffic levels for the purposes of analysis in the EIS. The two scenarios correspond to the lowest and highest estimated rail traffic estimates. Under the high rail traffic scenario, an average of 10.52 trains will move on the proposed rail line each day and under the low rail traffic scenario, an average of 3.68 trains will move on the proposed rail line each day.

The Project applicants will construct the proposed rail line using new materials, which will initially require a minimal amount of maintenance. For the Project, maintenance activities on the tracks will include rail surfacing, ballast cleaning and tamping, and rail grinding. Other maintenance activities will include maintaining rail sensors; lubricating rails; replacing rail, ties, and ballast; and inspecting track. In addition, any tunnels will require regular inspections and maintenance.

A detailed description of the Proposed Action including equipment and materials can be found in chapter 2 of the BA (STB 2021).

1.3 Applicant Committed Conservation Measures

The Coalition and STB have committed to conservation measures to reduce Project effects to the four Colorado River fishes, Barneby ridge-cress, Ute ladies'-tresses, Pariette cactus, and Uinta Basin hookless cactus. Key conservation measures from the BA are identified below, while a complete list of general and species-specific conservation measures are provided in Appendix A of this BO. If STB authorizes the Project and imposes the conservation measures set forth in this BA, all of the measures listed below and in Appendix A would be binding conditions that the Coalition would need to implement as part of the Project.

1. The Coalition shall consult with STB and our office regarding voluntary donations to the plant conservation fund for impacts to ESA-listed plants that are identified in suitable

habitat¹ areas during preconstruction surveys and shall implement mitigation that STB and our office approve.

2. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for ESA-listed species that could potentially be affected by the project.
3. The Coalition will finalize all plans for mitigating species-specific effects described below (i.e., identifying lands for permanent protections, payments to conservation funds, funding surveys) with our office prior to initiating construction. The Coalition will finalize and provide proof of payment for any payments to species specific conservation funds or recovery programs prior to construction.
4. The Coalition shall share the results of all threatened and endangered species surveys with the USFWS, the State of Utah, and all action agencies except for surveys occurring on Ute Indian Tribal land. For data from surveys on Ute Indian Tribal land, the Coalition shall seek the permission of the Ute Indian Tribe before sharing the survey results with the USFWS, the State of Utah, and all action agencies.

Barneby ridge-cress

1. Use the updated 2021 potential habitat polygon for conducting pre-construction surveys for Barneby ridge-cress and calculating acres of effected suitable habitat for subsequent conservation measures based on acres affected.
2. If ground-disturbing activities within 300 ft of Barneby ridge-cress plants or populations (i.e., occupied habitat) will be unavoidable, the Coalition shall develop a project-specific plan in consultation with our office, STB, and any appropriate land-management agencies to offset effects and monitor individuals or populations. The plan shall incorporate the following requirements:
 - a. The Coalition shall fund the permanent protection of occupied habitat at a 5:1 ratio, where one acre of occupied habitat lost would be replaced by five acres of occupied habitat of equal or better condition for Barneby ridge-cress. If Barneby ridge-cress mitigation is needed, the Coalition will prioritize the Utah Division of Wildlife Resources' (UDWR) Cottonwood Wildlife Management Area for permanent protection of occupied Barneby ridge-cress habitat in consultation with our office and UDWR. If insufficient acreage of documented habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 5:1 ratio.
 - b. If permanent protection of occupied habitat cannot be achieved at a 5:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with our office, the restoration or enhancement of Barneby ridge-cress habitat at a 5:1 ratio. Habitat restoration or enhancement activities, including maintenance and monitoring activities, shall be

¹ "Suitable habitat" is defined as areas that contain or exhibit the specific components or primary constituent elements necessary for plant persistence and may or may not contain target individuals (USFWS 2010a, b); "potential habitat" is defined as areas identified that may contain suitable or occupied habitat based on environmental factors but has not been surveyed for presence of the target species; "occupied habitat" is defined as a 300-foot area around target individuals (USFWS 2014).

conducted in accordance with protocols developed in consultation with and agreed to by our office.

- c. If neither the permanent protection of Barneby ridge-cress occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Barneby ridge-cress identified in consultation with and agreed to by our office.
- d. If any Barneby ridge-cress individuals would be crushed or killed by project activities, the Coalition shall collect seeds from the plants prior to construction, if possible. Seeds will be collected by a qualified botanist and stored according to USFWS and Center for Plant Conservation guidelines. The Coalition shall deliver any collected seeds to our office or designee.
- e. If construction activities would crush or kill Barneby ridge-cress individuals on public lands, the Coalition shall consult with the appropriate land-management agency and our office prior to undertaking activities that would crush or kill individual Barneby ridge-cress and shall relocate individual plants if requested by the land-management agency. A post-transplant monitoring plan would be developed in agreement with our office, and individuals would be monitored for 5 years post-transplant.

Ute ladies'-tresses

1. If ground-disturbing activities within 300 ft of Ute ladies'-tresses plants or populations (i.e., occupied habitat) would be unavoidable, the Coalition shall develop a project-specific plan in consultation with our office, STB, and appropriate land-management agencies to offset impacts and monitor individuals or populations. The plan shall incorporate the following requirements:
 - a. The Coalition shall fund the permanent protection of occupied habitat at a 3:1 ratio, where one acre of habitat lost would be replaced by three acres of protected habitat of equal or better condition for Ute ladies'-tresses. If insufficient acreage of documented occupied habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 3:1 ratio.
 - b. If permanent protection of occupied habitat cannot be achieved at a 3:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with our office, the restoration or enhancement of Ute ladies'-tresses habitat at a 5:1 ratio, where one acre of habitat lost would be replaced by five acres of restored habitat. Appropriate habitat enhancements may include, but are not limited to, removal of invasive woody vegetation [e.g., Russian olive (*Elaeagnus angustifolia*) or tamarisk (*Tamarix ramosissima*)], removal of native woody vegetation [e.g. Willow (*Salix spp.*)], suitable habitat reconnection, and reestablishment of native herbaceous communities in riparian areas. Habitat enhancements, including maintenance and monitoring of enhancements, shall be conducted in accordance with protocols developed in consultation with and agreed to by our office.

- c. If neither the permanent protection of occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Ute ladies'-tresses identified in consultation with and agreed to by our office.
- d. If any Ute ladies'-tresses individuals would be directly killed by project activities, the Coalition shall fund the collection, transplantation, and monitoring of those individuals. Plants shall be moved to suitable habitat within the same 10-digit hydrologic unit, if possible. If transplantation within the same 10-digit hydrologic unit is not possible because suitable habitat is unavailable or because of other considerations, plants may be placed in another hydrologic unit identified through consultation with our office. Transplanting and monitoring activities shall be conducted in accordance with protocols agreed to by our office.

Uinta Basin hookless cactus and Pariette cactus

1. On non-Ute Indian Tribe lands, if new surface disturbance occurs within occupied habitat, the Coalition shall either implement ecological restoration activities to be developed in consultation with and with the agreement of our office or may contribute to the *Sclerocactus* Conservation Fund. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance using the USFWS "2014 Ecological Restoration Mitigation Calculation Guidelines for impacts to *Sclerocactus wetlandicus* and *Sclerocactus brevispinus* Habitat." For impacts to habitat on non-Tribal lands funds shall be sent to:

Sclerocactus Conservation Fund

Impact-Directed Environmental Accounts National Fish and Wildlife Foundation
1133 Fifteenth Street NW, Suite 1100
Washington, DC 20005

2. If new surface disturbance occurs within occupied habitat on Tribal lands, the Coalition shall abide by the requirements of the 2015 Ute Indian Tribe's *Sclerocactus* Management Plan for the Uintah and Ouray Indian Reservation, Uinta Basin Utah (Ute Indian Tribe 2015) for mitigation of project-related activities on Tribal lands. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance from the results of pre-construction surveys. The Coalition shall work with our office and the Ute Indian Tribe to calculate the mitigation as described in the Tribe's *Sclerocactus* Management Plan. Funds shall be deposited to the Tribal *Sclerocactus* Conservation Fund, as directed by the Ute Indian Tribe.

Four Colorado River Fishes

As the project's average annual new depletion of 875 acre-feet is below the current sufficient progress threshold of 4,500 acre-feet, the Recovery Program will serve as conservation measures to minimize adverse effects to the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail, and destruction or adverse modification of critical habitat caused by the project's new depletion.

With respect to the depletion contribution, the Project applicants will make a one-time payment which has been calculated by multiplying the Project's average annual depletion (acre-feet) by the depletion charge in effect at the time payment is made. The fiscal year 2022 fee for water depletion projects is \$22.84 per acre-foot. Therefore, for the Uinta Basin Railway Project, the Project applicants owe \$19,985.00. Ten percent of the total is due upon issuance of approvals from the STB and other action agencies. The remainder is due when construction of the project commences. However, full payment of the fee is acceptable prior to project initiation if that is easier for the Project applicants.

Please note that the fee rate changes each September 1st based on inflation and your office is responsible for paying the rate in place at time of the writing of the check. Therefore, the rate may change subsequent to the writing of this letter, and the rate may change between the initial 10 percent payment and the payment of the remaining fee. Please check with George Weekley with the U.S. Fish and Wildlife Service Utah Field Office at (385) 285-7929 to ensure the Project applicants pay the correct amount.

Funds are not received by the U.S. Fish and Wildlife Service but are rather deposited into an account held by our partners at the National Fish and Wildlife Foundation (NFWF). Courtney Kwiatkowski is the account manager and can be reached at Courtney.Kwiatkowski@nfwf.org or (202) 857-0166. The Tax ID for NFWF is 52 1384139. To correctly submit the payments to NFWF please follow the directions below.

Payments can be made via check or secure Electronic Fund Transfer (EFT), although the preferred option of payment is EFT. Please contact NFWF to receive instructions for secure EFT payment. Payments made by check should be mailed to the address below. The check should include the following notation: "Upper Colorado Fish Recovery Program (IM.A131)."

National Fish and Wildlife Foundation
Attn: Chief Financial Officer
1133 15th Street, NW
Suite 1000
Washington, DC 20005

All payments should be accompanied by a cover letter (either mailed or emailed) that identifies the project title noted above, the amount of the payment, the check number (if applicable), the name and address of the payor (Project applicants), the name and address of the Federal Agency responsible for authorizing the project (STB), the USFWS office issuing the biological opinion (Utah ES office), and a note that the payment pertains to the "Upper Colorado Fish Recovery

Program.” This information will be used by NFWF to notify the Recovery Program within 5 working days that payment was received.

The payment will be accompanied by a cover letter that identifies the project and biological opinion number (06E23000-2020-F-0871) that requires the payment, the amount of payment enclosed, check number, and the following notation on the check – “Upper Colorado Fish Recovery Program, NA.1104”. The cover letter also shall identify the name and address of the payor, the name and address of the Federal Agency responsible for authorizing the project, and the address of the USFWS office issuing the biological opinion. This information will be used by the Foundation to notify the STB and the USFWS that payment has been received. The Foundation is to send notices of receipt to these entities within 5 working days of its receipt of payment.

2 ACTION AREA

The Project action area is defined in 50 CFR 402 to mean “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”

For the purpose of our evaluation of impacts to Barneby ridge-cress, Ute ladies’-tresses, Pariette cactus, Uinta Basin hookless cactus, and the four Colorado River fishes, we define the action area to include:

- The entire Project footprint;
- A 300-ft buffer from the edge of the Project footprint and any ground disturbance to account for effects from dust and to pollinators from Project actions; and
- The area of the Upper Colorado River Basin affected by water depletions. This includes the Green and Colorado Rivers and their 100-year floodplains from Flaming Gorge Reservoir downstream to Lake Powell.

3 STATUS OF THE SPECIES

The purpose of this section is to summarize the best available information regarding the current range-wide status of Barneby ridge-cress, Ute ladies’-tresses, Pariette cactus, Uinta Basin hookless cactus, and the four Colorado River fishes. Additional information regarding these species may be obtained from the sources cited below.

3.1 Barneby ridge-cress

Species Description

Barneby ridge-cress is an herbaceous perennial of the mustard (Brassicaceae) family known only from the Uinta Basin region of northeastern Utah and in Duchesne County, Utah (Welsh *et al.* 2008; USFWS 1993, USFWS 2021a). This species grows on sparsely vegetated ridgelines with poorly developed whitish soils derived from the Uinta and Green River formations (Service 1993; Lindstrom 2021). It is found at elevations between 5,896 to 6,654 ft (Service 1993; Lindstrom 2021). The plants grow in raised cushions 2.7 to 3.9 in tall and up to 8 in wide (Welsh *et al.* 2008). The stems are sub-glabrous (mostly hairless) to glabrous (hairless) with

narrow leaves clustering at the base of the plant (Welsh et al. 2008). Flowers are cream colored, about 0.25 in across and alternate along a stem rising 1 to 1.5 in above the base of the plant (Welsh et al. 2008). Flowering occurs from April through May; fruit development and seed dispersal occur from June through July (Welsh et al. 2008). Seeds are small, about 0.04 in across and are borne in egg-shaped capsules (silicles) about 0.2 in long (Welsh et al. 2008).

Life History and Population Dynamics

Barneby ridge-cress reproduces by seeds, but we lack information on its pollinators and breeding system (USFWS 1993). Other *Lepidium* species with showy flowers like Barneby ridge-cress depend on pollination by bees in the Apidae and Halictidae families and wasps in the Sphecidae family (Robertson and Klemash 2003). Low seed production has been observed in this species and we need more information to evaluate whether seed production is a limiting factor for the species (USFWS 2011a). The species produces viable seeds with high germination rates (90 percent) which remain viable for long periods (at least 21 years) in off-site (ex-situ) storage, indicating the potential of a long-lived seedbank in the wild (Hinz 2017). Life history and long-term population dynamics are unknown; individuals live at least five years based on infrequent site visits and monitoring (USFWS 1993). Associated plant species include other cushion-like plants, stemless four-nerve daisy (*Tetranneurius acaulis*), Hooker's sandwort (*Arenaria hookeri*), Townsend daisy (*Townsendia mensana*), and Colorado feverfew (*Parthenium ligulatum*); other forbs, Bateman's buckwheat (*Eriogonum batemanii*), tufted milkvetch (*Astragalus spatulatus*), and rough Indian paintbrush (*Castilleja scabrida*); and tree species, Colorado pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) (USFWS 1993).

Status, Distribution, and Threats

We listed Barneby ridge-cress as endangered under the authority of the ESA on September 28, 1990 (59 FR 39860). At the time of listing the primary threats to the species were oil and gas development and unauthorized off-road vehicle (OHV) use in the habitat. The restricted range and single population of this species were listed as vulnerabilities with the potential to exacerbate the effects to the species from identified threats. There is no critical habitat designated for this species. In 2019, the recovery criteria for the species were amended to include objective delisting criteria not included in the 1993 Recovery Plan (USFWS 2019a). In 2021, the potential habitat polygon was updated (Lindstrom 2021) and a five-year review was completed (USFWS 2021a).

The species' current range has expanded to approximately 985 ac of known occupied habitat spanning only 9 miles across (east to west) and distributed over three populations. We revised the potential habitat polygon in 2021 using the best available information for the species and its current range (Figure 1; Lindstrom 2021). The new polygon contains 45,714 ac of potential habitat (USFWS 2021a).

We now know of three populations² (Indian Canyon, Starvation Reservoir, and Coyote Canyon) that contain approximately 7,731 plants (Spector 2015; Environmental and Engineering Consulting (EIS) 2014; USFWS 2021a). The most recent population estimate of 6,614

² Population delineations are based on NatureServe criteria (NatureServe 2004).

individuals for the Indian Canyon population is larger than we identified at listing (USFWS 2021a). The Indian Canyon population is almost entirely on Ute Indian Tribal lands with a few individuals located on private lands (Service 2021a). Two new populations were located in 2014 and 2015, the Starvation Reservoir and Coyote Canyon populations, respectively (Figure 1). The Starvation Reservoir population is entirely on private land and has 27 individuals (EIS 2014; USFWS 2021a). The Coyote Canyon population contains at least 1,090 individuals located entirely on Utah Department of Wildlife Resources (UDWR) land that is managed as a wildlife management area (WMA). Additional suitable habitat throughout the species range has not been surveyed (Spector 2015; USFWS 2021a). Acres of potential habitat and occupied habitat by landowner type is shown in Table 2.

Table 2. Acres of potential and occupied habitat for Barneby ridge-crest by landowner type (Service 2021b).

	Ute Indian Tribe (acres)	State (UDWR) (acres)	Private (acres)
Potential Habitat	24,668	5,971	15,046
Occupied Habitat	868	32	86

The threats originally identified for Barneby ridge-crest remain threats to the species today. Oil and gas development and off-road vehicle (OHV) use are the primary threats to Barneby ridge-crest (USFWS 2021a).

Habitat loss associated with oil and gas development occurs across the known range of Barneby ridge-crest. There are 311 active oil and gas wells on 236 well pads within the potential habitat polygon boundaries, with only 1 well pad in occupied habitat (USFWS 2021a, b). The estimated area of disturbance is approximately 2.6 percent (1,199 ac) of potential habitat and less than one percent (5.25 ac) of occupied habitat (USFWS 2021a, b). These disturbance calculations only include surface disturbance that is associated with oil and gas development.

The Ute Indian Tribe has been actively policing OHV trespassing, reducing (but not eliminating) OHV use in Barneby ridge-crest habitat on Tribal lands (USFWS 2011). Vehicle tracks and damage to plants have been observed in the Coyote Canyon population and habitat area within the Cottonwood WMA (Spector 2015; Croft 2021; Reisor 2021). The species is not located on Federal land, and therefore a Federal nexus to address project-level effects is not assured. A conservation agreement or other similar type of protection has not established for the species. Therefore, additional regulatory mechanisms are needed to address threats to the species.

Climate change and drought were not identified as threats to Barneby ridge-crest at the time of listing. As a desert-adapted species in an environment characterized by drought cycles, we expect the species is well adapted to naturally occurring droughts. However, an increase in periodic prolonged droughts due to climate change beyond the naturally occurring drought cycles may reduce the resiliency and redundancy of Barneby ridge-crest (Gonzalez et al. 2018). The potential effects of climate change and drought to the species have not been evaluated.

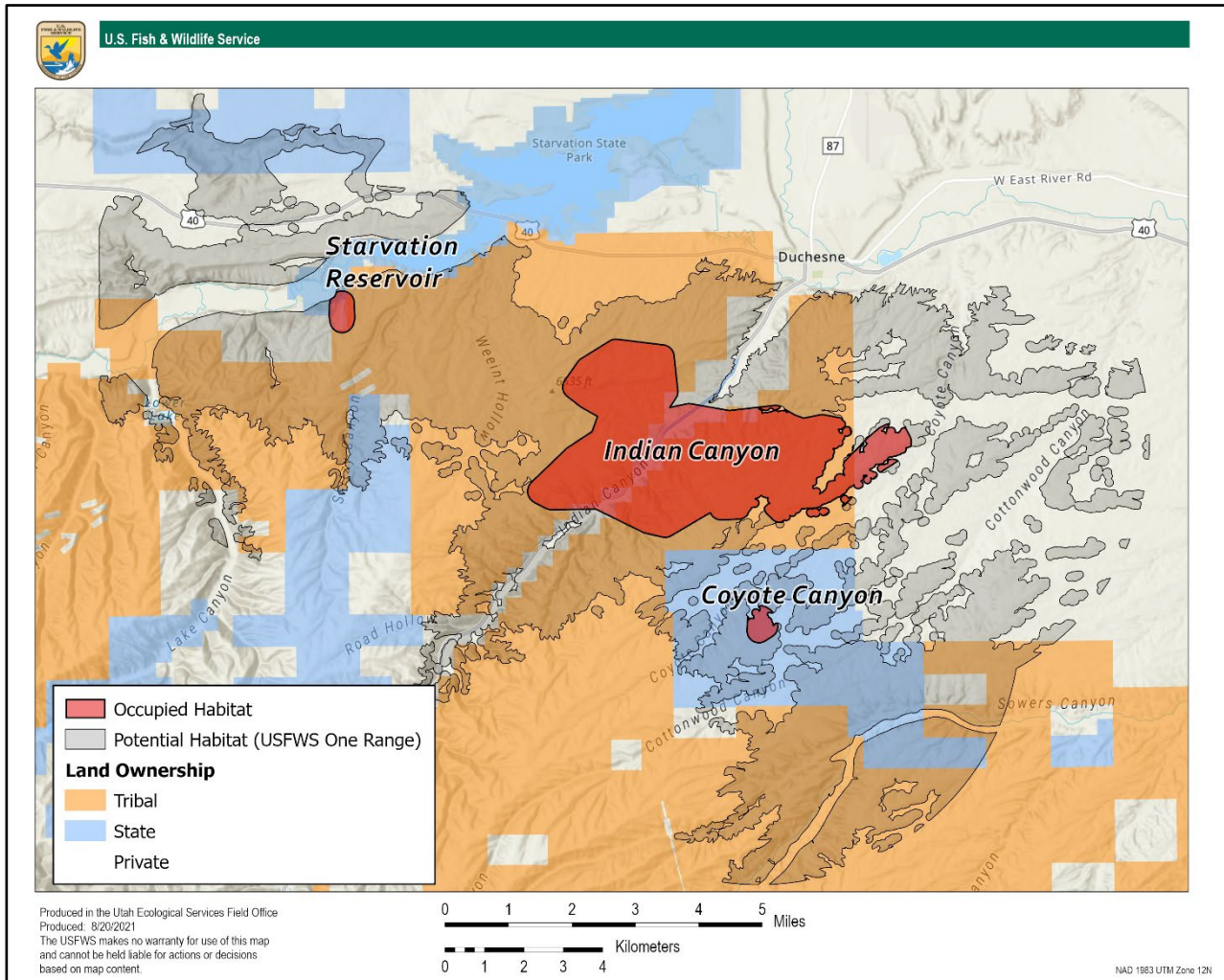


Figure 2. Map showing the three known populations of Barneby ridge-crest (red) on either Tribal (orange) or State (blue) land. The 2021 potential habitat polygon is shown in gray.

Critical Habitat Description

Critical habitat has not been proposed or designated for Barneby ridge-crest.

3.2 Ute ladies'-tresses

Species Description

Ute ladies'-tresses was first described as a species in 1984 from a population discovered near Golden, Colorado (Sheviak 1984). The species is a perennial orchid (member of the plant family Orchidaceae) that first emerges above ground as a rosette of thickened leaves and is very difficult to distinguish from other vegetation given the dense herbaceous vegetation where the species often grows. Its leaves are up to 0.6 in wide and 11 in long; the longest leaves are near the base. The usually solitary flowering stem is 8 to 20 in tall, terminating in a spike of 3 to 15

white or ivory flowers. Flowering generally occurs from mid-July through August. However, in some locations the species may bloom in early July, or may still be in flower in early October, depending on elevation and timing of high water flows.

Ute ladies'-tresses looks most similar to hooded ladies'-tresses (*Spiranthes romanzoffina*) but differs in the detailed characteristics of the individual flowers. In hooded ladies'-tresses (which is more common), each individual flower has petals and sepals that are fused to form a covering, or "hood." In Ute ladies'-tresses, these floral parts are not fused, appearing instead to be widely spread, or "gaping" open.

Life History and Population Dynamics

Ute ladies'-tresses is a long-lived perennial herb that is thought to reproduce exclusively by seed (Fertig et al. 2005). Bees are the primary pollinators; however, because Ute ladies'-tresses provides only nectar as a food reward, other pollen-providing plant species must be present to attract and maintain pollinators (Sipes and Tepedino 1995, Sipes et al. 1995, Pierson and Tepedino 2000).

The life cycle of Ute ladies'-tresses consists of four main stages including seedling, dormant, vegetative, and reproductive (flowering or fruiting) (Fertig et al. 2005). Ute ladies'-tresses seedlings may develop slowly into larger, dormant mycorrhizal roots or grow directly into above-ground vegetative shoots (Wells 1981), but neither has been confirmed in the wild. The Cincinnati Zoo and Botanical Garden has grown plants from seed under laboratory and greenhouse conditions; germination took 6 to 8 months and development from a protocorm (dormant orchid seedling) into a plant was slow (Pence 2009). Long-term demographic monitoring studies indicate that vegetative or reproductive Ute ladies'-tresses plants can revert to a below-ground existence for as many as four consecutive growing seasons before reemerging above ground (Arft 1995, Allison 2001, Heidel 2001).

Flowering individuals are necessary to reliably distinguish Ute ladies'-tresses from other similar-looking plant species (esp. other *Spiranthes* species), and surveys during flowering season also maximize the likelihood of detecting Ute ladies'-tresses among dense stands of other herbaceous plant species. However, surveys in which only flowering stems are tallied are of limited value for assessing population trends, given that individual Ute ladies'-tresses plants do not flower consistently from one year to the next, and the relative proportion of individual Ute ladies'-tresses plants in each of the four life stages (seedling, dormant, vegetative, reproductive) can vary widely within and among years and between different colonies (Arft 1995, Pierson and Tepedino 2000, Allison 2001, Heidel 2001, Fertig et al. 2005).

Population trends are less variable when inferred from datasets where all life stages are counted (Arft 1995, Heidel 2001). However, because non-reproductive individuals are inherently difficult and laborious to detect, most surveys tend to focus on the detection (and counting) of flowering individuals (Fertig et al. 2005). As a result, knowledge of Ute ladies'-tresses population trends is severely hindered. This also suggests that available estimates (derived solely from flowering stem counts) are likely to represent conservative estimates of total population size.

When Ute ladies'-tresses was listed under the ESA in 1992, the rangewide population was estimated to contain fewer than 6,000 individuals (USFWS 1992, Fertig et al. 2005). In 1995, the draft recovery plan increased this estimate to 20,500 individuals, primarily the result of 21 new populations discovered over the previous 3 years (USFWS 1995). As of 2005, 53 populations were estimated to collectively contain more than 80,000 (83,316) individuals (Fertig et al. 2005). For these populations, available population estimates ranged in size from 1 to more than 28,000 plants. More than 80 percent of these populations contained fewer than 1,000 individuals, and 38 percent contained fewer than 100 individuals. A review of the latest information on the species biology, trend, and stressors (called a Species Status Assessment [SSA]) is currently in progress and is expected to be finalized in 2022.

Status, Distribution, and Threats

We listed Ute ladies'-tresses as threatened in its entire range under the ESA on January 17, 1992 (USFWS 1992). A draft recovery plan was prepared, but not finalized (USFWS 1995). The descriptions that follow are derived from a draft recovery plan, a range-wide status review (Fertig et al. 2005), and additional sources as necessary. When it was listed under the ESA in 1992, Ute ladies'-tresses was known from 10 extant populations within portions of only two states (Colorado and Utah, USFWS 1992). At that time, these 10 populations were estimated to encompass approximately 170 ac of occupied habitat. At listing, the species was presumed extirpated in Nevada.

Since listing, Ute ladies'-tresses was rediscovered in Nevada, and new populations were discovered in southern Idaho, southwestern Montana, western Nebraska, central and northern Washington, southeastern Wyoming (Fertig et al. 2005), and south-central British Columbia (Bjork 2007). In 2005, 53 populations (encompassing 674 to 784 ac of habitat) were considered extant across the range of the species (Fertig et al. 2005); the British Columbia locations were discovered the following year (Björk 2007). Utah had the most populations (23), the largest amount of occupied habitat (234 to 308 ac), and the highest number of reported plants (47,859 individuals) of any state (Fertig et al. 2005). The Spanish Fork watershed in Utah was assessed as having the highest recorded population estimate (28,825 plants), whereas the Upper Green-Flaming Gorge Reservoir population (which spans the Colorado-Utah border) spanned the most extensive area (117 to 126 ac). The majority of known populations (66 percent) occupied between 0.1 and 10 ac, whereas relatively few (4.9 percent) occupied more than 50 ac.

Ute ladies'-tresses occurs in a variety of human-modified and natural habitats, including, seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels and valleys, and lakeshores (Jennings 1989, USFWS 1992, Fertig et al. 2005). Numerous populations also occur along irrigation canals, behind berms, within abandoned roadside borrow pits, along reservoir edges, and other human created or modified wetlands. Streamside populations of Ute ladies'-tresses typically occur on shallow alluvial soils overlying permeable cobbles, gravels, and sediments. Across the range of the species, populations occur at elevations ranging from 720 to 1,830 ft in Washington and British Columbia to 7,000 ft in northern Utah.

Most Ute ladies'-tresses sites have early- to mid-successional vegetation (well-established grasses and forbs) communities that are maintained by human disturbances such as livestock grazing, mowing, ditch and irrigation maintenance, and prescribed fire (Allison 2001, Fertig et al. 2005). Ute ladies'-tresses may persist for some time in the grassy understory of woody riparian shrublands, but it does not appear to thrive under these conditions (Ward and Naumann 1998).

Nearly all streambank, floodplain, and abandoned ox-bow sites occupied by Ute ladies'-tresses have a high water table (usually within 5 to 18 in of the surface) augmented by seasonal flooding, snowmelt, runoff, and often irrigation (Jennings 1989, Arft 1995, Black et al. 1999, Riedel 2002). Soils must be sufficiently stable and moist in the summer flowering season to support the species (Ward and Naumann 1998). Sites located in springs or sub-irrigated meadows appear to be fed by groundwater rather than surface flows. Less is known about the average depths to groundwater in these locations, but it is reasonable to assume that (as with locations where groundwater depths have been quantified) groundwater must remain relatively close to the surface in order to sustain the moist soils consistently associated with Ute ladies'-tresses.

At the time of listing, we identified habitat loss and modification as the primary threat to the species, but also noted that small population sizes and low reproductive rates rendered Ute ladies'-tresses vulnerable to other threats (USFWS 1992). Our listing rule identified several specific forms of habitat loss and modification as threats to Ute ladies'-tresses, including urbanization, water development and conversion of lands to agriculture, excessive livestock grazing, excessive or inappropriate use of herbicides or other chemicals, and the proliferation of invasive exotic plant species. In addition, we concluded that the species may be subject to over-collection, given its status as an orchid and inquiries from orchid enthusiasts and wildflower collectors.

Today, many of these same threats affect Ute ladies'-tresses at least at the site-specific level (Fertig et al. 2005), and some newer stressors have emerged. For example, whereas over-collection had not materialized as a specific threat to Ute ladies'-tresses, vegetation succession, losses or reductions in pollinators, and changes in hydrology are stressors that were found to be acting on the species after it was listed.

Ute ladies'-tresses is an early- to mid-seral successional species. This means that as natural ecological succession occurs after a disturbance event to the habitat, the vegetative community usually becomes less suitable for Ute ladies'-tresses due to competition, drying of soil, and increased canopy cover. Ute ladies'-tresses requires moderate levels of periodic disturbance to maintain its habitat in a suitable successional stage (Fertig et al. 2005).

Ute ladies'-tresses is dependent on bees for pollination and successful sexual reproduction. Any reduction in the availability of bees (including reductions due to changes in the vegetative community and floral resources) will result in declining recruitment and fewer individuals (Fertig et al. 2005). Declines in the number of suitable pollinators have been documented specifically in Ute ladies'-tresses habitat (Fertig et al. 2005) and overall declines in numbers of native bees in North America have been well documented in recent years, with over half the

known species of native bees (with available data sufficient for trend analysis) experiencing declines (Kopec and Burd 2017).

As a wetland-obligate species, Ute ladies'-tresses is extremely dependent on the hydrology of its habitats. Any changes to the hydrology that would cause either drying or long-term inundation of the habitat can result in unsuitable habitat for the species. Additionally, as moderate periodic disturbance is needed to maintain or create Ute ladies'-tresses habitat, those populations that rely on hydrologic events such as flooding for that disturbance are vulnerable to changes in hydrology. Both decreases and increases in stream flows and flooding events can render the habitat less or no longer suitable for Ute ladies' tresses (Fertig et al. 2005).

In addition to these new stressors, at the time of listing we identified several specific forms of habitat loss and modification as threats to Ute ladies'-tresses, including urbanization, invasive plant species, and water development. Roadways and ground disturbance provide corridors and vectors for the introduction and spread of invasive and non-native species (Forman et al. 2003; Gelbard and Belnap 2003; Watkins et al. 2003; Flory and Clay 2006; Christen and Matlock 2009; Mortensen et al. 2009). Invasive species can affect individuals, populations, and ecosystems through competition, change in community composition, and changes in environmental conditions (Simberloff et al. 2013). The impacts of invasive species usually decline with increasing distance from disturbance (Gelbard and Belnap 2003; Forman et al. 2003).

Common invasive weed species in Duchesne County found within Ute ladies'-tresses habitat include Russian knapweed (*Acroptilon repens*), teasel (*Dipsacus fullonum*), perennial pepperweed (*Lepidium latifolium*), Canada thistle (*Cirsium arvense*), Russian olive, and salt cedar (*Tamarix ramosissima*). Invasive weeds compete with Ute ladies'-tresses for resources via competition for sunlight and space which can then result in displacement of Ute ladies-tresses plants. Since Ute ladies'-tresses is a small stature plant, it requires open riparian patches with low growing herbaceous vegetation that will not block sunlight.

Conversion of irrigation water to municipal use, flood control (includes riverbank stabilization), water development or redevelopment, and restoration projects targeting stream and riparian corridors (includes in-stream and habitat alteration) contribute to altered hydrologic regimes across the species' range. However, Ute ladies'-tresses has proliferated in areas with greatly altered, but stable and predictable hydrology (Fertig et al. 2005). Prominent examples include the Green River along the Colorado-Utah border (Ward and Naumann 1998), Diamond Fork Creek in the Spanish Fork watershed of Utah (Black and Gruwell 2004), the Columbia River in Washington (Cordell-Stine and Pope 2008), and the South Fork Snake River in Idaho (Idaho Conservation Data Center 2007). The species is also frequently encountered along streams and canals and in wet hay pastures in the Uinta Basin of eastern Utah, even though an extensive irrigation canal system was constructed in the early 1900s and natural streams are nearly dry all summer (Fertig et al. 2005, Kendrick 1989). Ute ladies'-tresses has also colonized wetlands left behind when peat was mined, and the species occurs in drainage ditches alongside roads and railroad tracks (Fertig et al. 2005).

In summary, Ute ladies'-tresses occurs in more than 50 populations distributed across eight U.S. states and one Canadian province. These populations collectively contain some 80,000 individuals. Approximately 80 percent of known populations are associated with lands managed for agriculture or recreation, rivers regulated by dams, or other human-modified habitats (Fertig et al. 2005). Research, monitoring, and management activities have demonstrated that ongoing patterns of land use across the range of the species are capable of mimicking or providing the conditions required for the species' persistence.

Critical Habitat Description

Critical habitat has not been proposed or designated for Ute ladies'-tresses.

3.3 Uinta Basin hookless cactus and Pariette cactus

Species Description

Uinta Basin hookless cactus is typically a solitary cactus with rounded (globose to short-cylindric) stems ranging from 1.5 to 7 in tall, with exceptional plants up to 12 in tall, and 1.6 to 4.7 in in diameter (74 FR 47112, September 15, 2009, Holmgren et al. 2012). The stems have typically 12 to 15 ribs with tubercles (small rounded projections along the rib) that are evident. Along the ribs are areoles (tip of tubercle where spines originate) with hooked spines of two types (radial and central) radiating outward. The 6 to 10 radial spines are white or gray to light brown and are 0.24 to 0.8 in long. The one to five central spines (usually three) are 0.5 to 2.0 in long, are generally longer than radial spines, and extend from the center of the areole (Holmgren et al. 2012).

Uinta Basin hookless cactus generally flowers from May through mid-June. The funnel-shaped flowers usually have light pink to dark pink tepals (petals and petal-like sepals) with yellow stamens (the male reproductive organ of the flower) (Holmgren et al. 2012). The fruit is short, barrel-shaped, reddish or reddish-grey when ripe, 0.35 to 1.0 in long and 0.2 to 0.5 in wide (Holmgren et al. 2012). The root structure is composed of a central tap root 6 to 8 in long with many fibrous lateral roots extending an average of 8 to 10 in from the main stem, or even farther for larger individuals (Reisor 2013).

Pariette cactus is separated from other cactus in the genus by a single, small central spine that is strongly hookless with the tip almost touching the surface of the areole (Hochstatter 1989, 74 FR 47112, September 15, 2009). The species also tends to be smaller in size than other species in the *Sclerocactus* genus ranging from 1.0 to 3.1 in tall and 0.7 to 3 in wide (Porter et al. 2007; Holmgren et al. 2012; Welsh et al. 2016). The stems typically have 12 or 13 ribs. Along the ribs are areoles (tip of tubercle where spines originate) with hooked spines of two types (radial and central) (Holmgren et al. 2012). Spines are not overlapping and do not obscure the stem. There are 6 to 9 radial spines located around the margin of the areole, 0.2 in long, appressed, that extend parallel to the body of the plant. The 2 to 3 central spines are 0.3 to 0.4 in long and extend from the center of the areole.

Pariette cactus generally flowers from May through mid-June. The bell-shaped flowers usually have pink tepals and yellow stamens and are 0.8 to 1.4 in long and 0.6 to 1 in wide. The fruit is short, barrel-shaped, reddish or reddish grey when ripe, 0.4 to 0.8 in long and 0.3 to 0.5 in diameter (Holmgren et al. 2012).

Field identification to distinguish the two cactus species is complicated by the fact that the Uinta Basin hookless cactus and Pariette cactus easily hybridize with each other. Hybridization between the two species makes it difficult to distinguish them morphologically, as there is no clear delineation between their ranges, and both species can exist in close proximity to each other within different microhabitats (71 FR 75216 December 14, 2006, Tepedino et al. 2010).

Life History and Population Dynamics

Both *Sclerocactus* species require pollinators to transport pollen from flowers of other plants in order to produce viable seeds (Tepedino et al. 2010). Flowers typically open in mid-day and close late in the afternoon for three to five days (Tepedino et al. 2010). A broad assemblage of native, ground-nesting bees, mostly from the family Halictidae (Tepedino et al. 2010; BIO-Logic 2015), pollinate the Pariette cactus and Uinta Basin hookless cactus. These bees can travel from 0.2 to 0.6 mi between plants (Tepedino 2010). Other insects, including ants and beetles, may pollinate Uinta Basin hookless cactus (USFWS 1990), though both are predominately pollinated by ground-nesting bees (Tepedino et al. 2010). Bees appear to be sufficiently pollinating the Uinta Basin hookless cactus across the species' range (Tepedino et al. 2010). Under-pollination may be a problem for Pariette cactus, but more studies are needed to confirm this supposition (Tepedino et al. 2010; BIO-Logic 2015). A healthy pollinator population, with high pollinator abundance and species richness, is important for supporting population-level reproduction (Bio-Logic 2015).

Seedlings germinate opportunistically throughout the growing season (Hornbeck 2020, Reisor 2013), though most cacti species germinate in the spring or fall and is linked to precipitation (Godínez-Álvarez et al. 2003, Martínez-Berdeja and Valverde 2008, Arroyo-Cosultchi et al. 2016, Shyrock et al. 2014). Seed germination, growth rate, survival, and overall plant health may be linked to the presence of arbuscular mycorrhizae (symbiotic fungus) in the soil. There are three common genera of arbuscular mycorrhizae associated with the species: *Rhizophagus*, *Glomus*, and *Claroideoglomus* (Harding 2017). Both species can shrink or contract underground during times of drought to conserve water and develop branches or pups as a means of clonal growth (Hornbeck 2020, Salguero-Gómez and Casper 2010). Seed production, seedling recruitment, and survival are strongly and positively associated with the size of adult plants of both species, and survival of the largest individuals is the primary contributor to population growth (Hornbeck 2020).

Status, Distribution, and Threats

Uinta Basin hookless cactus and Pariette cactus were listed as threatened species in 1979 under the Colorado hookless cactus (*Sclerocactus glaucus*) listing. The listing was based on the threats of mineral and energy development, illegal collection, recreational off-road vehicle (ORV) use, and grazing (44 FR 58868, October 11, 1979). In 2009, the Colorado hookless cactus complex was separated into three species (see *Species Description* section above): Uinta Basin hookless cactus (*S. wetlandicus*), Pariette cactus (*S. brevispinus*), and Colorado hookless cactus (*S. glaucus*), with each retaining their threatened status (74 FR 47112, September 15, 2009).

Uinta Basin hookless cactus is found primarily within Uintah County, Utah along the Green and White Rivers and their tributaries, with some individuals occurring in Duchesne and Carbon counties. The range (i.e., potential habitat polygon) of the species is approximately 516,070 ac (208,846 ha), with 53 percent occurring on Federal land, 28 percent on Ute Indian Tribe lands, and the remainder on private or State lands (USFWS 2019b). The total population size estimate is 83,408 to 110,815 individuals. We consider the species to occupy one metapopulation (a regional grouping of connected populations) across its range comprised of 11 core 2 areas (Bonanza, Lower Green, Middle Green, Upper Green, Nine Mile, White River, Duchesne East, Duchesne West, Lower Pariette, Upper Pariette, Myton). Each core 2 area contains core 1 areas of high cactus density and pollinator habitat. We prioritize the conservation of core 1 and core 2 areas to support the needs of the species, its pollinators, and maintain metapopulation processes.

The metapopulation trend of Uinta Basin hookless cactus is just below the stable range (λ ³ average of 0.943, range 0.724 to 1.077) identified for the species (stable λ is 0.950 to 1.05) (Hornbeck 2020). This indicates that the metapopulation is declining during the time period evaluated (2013 to 2019); however continued monitoring for a longer timeframe (10 to 20 years) is recommended based on the species' life history. There is a high degree of demographic variability between core 2 areas (Hornbeck 2020). The species appears to be negatively affected by trampling (livestock, wild horses), herbivory, and drought. It is difficult to discern the relative effects of various factors (invasive species, herbivory, drought, habitat loss and fragmentation) due to extensive effects from trampling (livestock, wild horses). However, generalized degradation of the habitat is likely a potential contributor to population behavior (Hornbeck 2020). The threats to the species include mineral and energy development, illegal collection, recreational off-road vehicle (ORV) use, and grazing and are discussed in the listing decision and latest 5-Year Review (USFWS 2020).

Pariette cactus is endemic to the Uinta Basin region of northeastern Utah, which is part of the Colorado Plateau ecoregion. The species is found primarily within Uintah and Duchesne Counties, Utah with individuals occurring west of the Duchesne River, in the upper reaches of Pariette Wash, and Castle Peak Draw. The range (i.e., potential habitat polygon) of the species is approximately 111,092 ac, with 29 percent occurring on Federal land, 32 percent on Ute Indian Tribe lands, 35 percent on private, and the remainder on State lands (USFWS 2019b). The total population size estimate is 30,500 to 42,281 individuals. We consider the species to occupy one metapopulation (a regional grouping of connected populations) across its range comprised of four core 2 areas (Duchesne West, Lower Pariette, Upper Pariette, Myton). Uinta Basin hookless

³ The rate of population growth.

cactus also occurs within the four core 2 areas. Each core 2 area contains core 1 areas of high cactus density and pollinator habitat. We prioritize the conservation of core 1 and core 2 areas to support the needs of the species, its pollinators, and maintain metapopulation processes.

The metapopulation trend of Pariette cactus is just below the stable range (lambda average of 0.947, range 0.825 to 1.02) identified for the species (stable lambda is 0.950 to 1.05) (Hornbeck 2020). This indicates that the metapopulation is declining during the time period evaluated (2013 to 2019); however continued monitoring for a longer timeframe (10 to 20 years) is recommended based on the species' life history. There is some degree of demographic variability between core 2 areas (Hornbeck 2020). The species appears to be negatively affected by trampling (livestock, wild horses), herbivory, and drought. It is difficult to discern the relative effects of various factors (invasive species, herbivory, drought, habitat loss and fragmentation) due to extensive effects from trampling (livestock, wild horses). However, generalized degradation of the habitat is likely a potential contributor to population behavior (Hornbeck 2020). The threats to the species include mineral and energy development, illegal collection, recreational off-road vehicle (ORV) use, and grazing and are discussed in the listing decision and latest 5-Year Review (USFWS 2020).

Critical Habitat Description

Critical habitat has not been proposed or designated for Uinta Basin hookless cactus and Pariette cactus.

3.4 Colorado River Fishes

3.4.1 Colorado Pikeminnow

The Colorado pikeminnow is a large minnow native to the Colorado River system of the western United States and northern Mexico. The current range of the Colorado pikeminnow is reduced due to flow regulation, habitat loss, migration barriers (i.e., dams), and the introduction of nonnative fishes. The species now exists only in the Upper Colorado River system. We discuss specific information on Colorado pikeminnow populations in the Environmental Baseline (section 4.1.4) below.

Adult Colorado pikeminnow prefer medium to large rivers, where they occur in habitats ranging from deep, turbid rapids to flooded lowlands. Slow-moving backwaters serve as nursery areas for young pikeminnow (USFWS 2002a). The Colorado pikeminnow primarily eats fish and minnows, but smaller individuals will also feed on insects and other invertebrates. We designated six reaches of the Colorado River System as critical habitat, including portions of the Colorado, Green, Yampa, White, and San Juan rivers, totaling 1,148 mi of critical habitat for the species (59 FR 13374). In Utah, we designated 726 mi of critical habitat in portions of the Green, Colorado, White, and San Juan rivers and their associated 100-year floodplains. We developed a recovery plan for the Colorado pikeminnow in 1991 and subsequently revised the plan in 2002 (USFWS 2002a).

3.4.2 Razorback Sucker

The largest native sucker to the western United States, the razorback sucker is a river catostomid endemic to the Colorado River Basin (USFWS 2002b). The species feeds primarily on algae, aquatic insects, and other aquatic macroinvertebrates. We listed razorback sucker as an endangered species in 1991. The current range of the species is reduced due to flow regulation, habitat loss, migration barriers, and the introduction of nonnative fishes. We discuss specific information on razorback sucker populations in the Environmental Baseline (section 4.1.4) below.

Historically, the razorback sucker occupied the mainstem Colorado River and many of its tributaries from northern Mexico through Arizona and Utah into Wyoming, Colorado, and New Mexico. Populations of this species in the Upper Colorado River Basin occur in the Green, Upper Colorado, and San Juan rivers (USFWS 2002b). Habitat occupied by the sucker appears to be seasonal, and they prefer warm water rivers.

Designated critical habitat occurs in portions of the Green, Colorado, Duchesne, White, and San Juan Rivers (59 FR 13374). In Utah, we designated 688 river miles and the associated 100-year floodplain as critical habitat. We finalized the recovery plan for the species in 2002 (USFWS 2002b).

3.4.3 Humpback Chub

The humpback chub is a medium-sized freshwater fish of the minnow family endemic to the Colorado River Basin. Humpback chub mainly occur in river canyons where they use a variety of habitats, including deep pools, eddies, upwells near boulders, and areas near steep cliff faces. Young and spawning adults are generally found in sandy runs and backwaters (USFWS 2002c). We discuss specific information on humpback chub populations in the Environmental Baseline (section 4.1.4) below.

Humpback chub occur in portions of the main-stem Colorado River and two tributaries, the Green and Little Colorado Rivers. Its habitat preferences are not well understood, but are associated with a variety of habitats, including pools ranging from 3.3 to 49.2 ft in depth with turbulent to no current. Substrates of occupied habitat include silt, sand, boulder, and bedrock (USFWS 2011b).

Currently, there are five known self-sustaining populations of humpback chub. Four occur in the Upper Colorado Basin Recovery Unit and one occurs in the Lower Colorado Basin Recovery Unit. In Utah, Desolation and Gray canyons of the Green River hold one of three abundant populations of this species (USFWS 2002c) in the Upper Basin.

We designated 139 river miles and adjacent 100-year floodplain in Utah as critical habitat for the humpback chub in portions of the Green and Colorado Rivers (59 FR 13374). We finalized the latest recovery plan for the species in 2002 (USFWS 2002c).

3.4.4 Bonytail Chub

Bonytail chub is a minnow species native to the Colorado River Basin. Bonytail distribution and population has declined significantly over the last century. This species was one of the first fish species to reflect the changes that occurred to the Colorado River system from construction of Hoover Dam, which caused an alteration to the natural flow regime of the river. Other causes for the near extinction of this fish include habitat loss/alteration and competition with nonnative fishes in the Colorado River (USFWS 2002d). We discuss specific information on bonytail chub populations in the Environmental Baseline (section 4.1.4) below.

We know little about the specific food and habitat of the bonytail because the species was extirpated from most of its historic range prior to extensive surveys, but we believe it is adapted to mainstem rivers. The species resides in pools and eddies and its primary food sources are terrestrial and aquatic insects (USFWS 2002d). In Utah, the bonytail occurs in the Green River and Colorado River.

We designated 139 river miles and the adjacent 100-year floodplain in Utah as critical habitat for the bonytail chub in these rivers (59 FR 13374). We finalized the latest recovery plan for the species in 2002 (USFWS 2002d).

4 ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the Proposed Action. The environmental baseline includes the past and present effects of all Federal, state, or private actions and other human activities in the action area, the anticipated effects of all proposed Federal projects in the action that have already undergone formal or early section 7 consultation, and the effects of state or private actions that are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

4.1 Status of the Species in the Action Area

4.1.1 Barneby ridge-cress

The Project bisects the Indian Canyon population and this is the only population directly affected. As described in the Status of the Species (section 3.1), we do not have information on population trend or specific biological needs of the species. Project specific surveys identified 239 ac (less than one percent of the potential habitat) of suitable habitat within the action area, with 170 ac on private lands and 69 on Ute Indian Tribe lands (HDR Inc 2021a) to date. Species level clearance surveys are not complete and have not yet been completed on 15 ac of private lands in the action area. Based on the preliminary survey information and our definition of occupied habitat (300 ft around known plants), there are 130 ac of occupied habitat (13 percent) for Barneby ridge-cress in the action area, including approximately 52 ac (five percent) of

occupied habitat within the Project footprint that will directly impacted (Table 3; USFWS 2021b, HDR Inc. 2021a).

Currently, there are approximately 2,212 known individuals (22 percent of the total population; 26 percent of the Indian Canyon population) of Barneby ridge-cress in the action area (Table 2) (HDR Inc 2021a, USFWS 2021b). 269 (2.8 percent of the total population; 3 percent of the Indian Canyon population) of those individuals are also within the Project footprint and may be directly lost due to the Project construction. Species level clearance surveys are ongoing and have not yet been completed on 15 ac of private lands in the action area; therefore, we do not know the exact number of individuals present in the Project footprint and action area. Clearance surveys will continue in 2022 for the species. Without clearance surveys throughout the entire suitable habitat area for Barneby ridge-cress, the STB and applicants acknowledge the inability to document all Barneby ridge-cress individuals and the extent of occupied habitat within the action area prior to our issuance of the BO (see section 4.2.1, below).

Table 3. The status of Barneby ridge-cress within the action area based on survey results to-date.

Evaluation Area	Number of Plants	Occupied Habitat (acres)	Suitable Habitat (acres)
Project Footprint	269	52	Not applicable
Action Area	2,212	130	239

The acres of habitat evaluated for this BO differ from the acres of habitat presented in the BA for two reasons: 1) we used the 2021 potential habitat polygon for our analyses which was updated after the BA was written, therefore the BA used the older polygon; and 2) we defined the action area to include the Project footprint plus a 300 ft buffer which is larger than the Project footprint that was used for the analysis area in the BA.

4.1.2 Ute ladies'-tresses

There are no records of Ute ladies'-tresses within the action area, and first year (2021) surveys did not locate any individuals (Table 4; HDR Inc. 2021b). Without three consecutive years of clearance surveys in suitable habitat area for Ute ladies'-tresses, the STB and applicants acknowledge the inability to document all Ute ladies'-tresses individuals and the extent of occupied habitat within the action area prior to our issuance of the BO (see section 4.1.2, below).

Habitat assessments performed for the Project identified approximately 11.39 ac of Ute ladies'-tresses suitable habitat in the action area with 4 of those acres within the project footprint (Table 4, HDR Inc. 2021b, USFWS 2021b). The acres of habitat evaluated in this BO differ from the acres of habitat discussed in the BA due to our use of an updated potential habitat polygon (Juliussan 2020) and our definition of the action area (see section 2).

The majority of suitable Ute ladies'-tresses habitat within the action area occurs on wetland terraces adjacent to Indian Canyon Creek and wet meadow wetlands that rely on Indian Canyon Creek as a primary source of hydrology. These terraces and wet meadows often exhibit moderately dense vegetation and non-saline conditions, which provide suitable habitat for the

species. Common plant species found in areas identified as suitable Ute ladies'-tresses habitat include mountain rush (*Juncus arcticus* ssp. *littoralis*), foxtail barley (*Hordeum jubatum*), alkali buttercup (*Ranunculus cymbalaria*), and willow species (*Salix* species) (BA, section 4.3.7.).

Table 4. The status of Ute ladies'-tresses within the action area based on survey results to-date (HDR Inc. 2021b, USFWS 2021b).

Evaluation Area	Number of Plants	Occupied Habitat (acres)	Suitable Habitat (acres)
Project Footprint	Unknown	Unknown	4
Action Area	Unknown	Unknown	11.39

4.1.3 Uinta Basin hookless cactus and Pariette cactus

For Uinta Basin hookless cactus, there are 1,203 total acres of potential habitat (less than one percent of the total potential habitat) in the action area (Table 5). Nested within the potential habitat are 309 ac of Myton core 2 habitat (excluding Core 1 habitat, is less than one percent of the total core 2 habitat) and 56 ac of core 1 habitat (less than one percent of the total core 1 habitat) also within the action area (Table 5). Currently, there are 365 known individuals (one percent of the total population; five percent of the Myton core 2 area) of Uinta Basin hookless cactus in the action area (Table 5). This analysis is based on pre-existing information from the USFWS species database and does not include survey information for this Project. Clearance surveys have not yet been completed for this Project; therefore, the STB and applicants acknowledge the inability to document all Uinta Basin hookless cactus individuals and the extent of occupied habitat within the action area prior to our issuance of the BO (see section 4.1.3, below). Clearance surveys will be conducted in 2022 for the species.

Table 5. The status of Uinta Basin hookless cactus within the action area to-date.

Evaluation Area	Number of Plants	Core 2 Area (acres)	Core 1 Area (acres)	Potential Habitat (acres)	Total Habitat (acres)
Project Footprint	56	127	56	321	504
Action Area	365	309	182	712	1,203

For Pariette cactus, there are 1,203 ac of potential habitat (one percent of the total potential habitat) and 491 ac of the Myton core 2 habitat (less than one percent of the total core 2 habitat) in the action area (Table 6). Within the Myton core 2 area, there is approximately 183 ac of core 1 habitat (less than one percent of the total core 1 habitat) in the action area (Table 6). Currently, there are 324 known individuals (one percent of the total population; seven percent of the Myton core 2 area) of Pariette cactus in the action area (Table 6). Clearance surveys have not yet been completed for this Project; therefore, the STB and applicants acknowledge the inability to document all Uinta Basin hookless cactus individuals and the extent of occupied habitat within

the action area prior to our issuance of the BO (see section 4.2.3, below). Clearance surveys will be conducted in 2022 for the species.

Table 6. The status of Pariette cactus within the action area to-date.

Evaluation Area	Number of Plants	Core 2 Area (acres)	Core 1 Area (acres)	Potential Habitat (acres)	Total Habitat (acres)
Project Footprint	206	127	56	321	504
Action Area	324	309	182	712	1,203

4.1.4 Colorado River Fishes

The Project occurs within the hydrographic sub-basin for the mainstem Green River in Utah. For all four endangered fish species, the Project occurs within the Upper Colorado River Basin Recovery Unit. Within this Recovery Unit, we established specific recovery criteria for the Green River sub-basin for all four species, including population demographics. Self-sustaining and stable populations of these species in the Green River sub-basin are required for species recovery (USFWS 2002a, 2002b, 2002c, 2002d).

We designated the Green River and its 100-year floodplains between the Yampa River confluence and the Colorado River confluence as critical habitat for at least one of the species (59 FR 13374).

Currently, the Project action area includes:

- a wild population of Colorado pikeminnow;
- one of two primary Colorado pikeminnow nursery habitats;
- known, active migratory routes for spawning Colorado pikeminnow and razorback sucker; and
- known occupied habitat for Colorado pikeminnow, razorback sucker, humpback chub, and bonytail.

Colorado Pikeminnow

The largest, most productive, and most robust population of Colorado pikeminnow in the upper Colorado River Basin occurs in the mainstem Green River (combining the lower Green River, Desolation and Gray Canyon, White River, Yampa River, and middle Green River populations). Higher abundance of Colorado pikeminnow juveniles and recruits in the 2006 to 2008 sampling period is attributed to a relatively strong year class of age-0 Colorado pikeminnow produced in the lower Green River in 2000 (Bestgen et al. 2010). Length frequency histograms, especially in the Desolation-Gray Canyon and lower Green River reaches, indicate that abundance of Colorado pikeminnow recruits was much higher in the period from 2006 to 2008, than from 2000 to 2003 (Bestgen et al. 2010).

Colorado pikeminnow spawn in two principal sites: Gray Canyon in the lower Green River and the lower Yampa River (USFWS 2002a). The importance of the lower Green River Colorado pikeminnow population is evidenced by increased abundance of adult Colorado pikeminnow in the White River and middle Green River through 2008. This phenomenon is almost certainly the result of upstream movement (high transition rates) of large numbers of juvenile and recruit-sized Colorado pikeminnow that originated in downstream reaches of the Green River in 2006 and 2007 (Bestgen et al. 2010). In recent years, Colorado pikeminnow populations have declined and the most recent population estimate in the Green River sub-basin numbers around 2,000 adult pikeminnow (Bestgen et al. 2018).

Razorback Sucker

Since 2000, over 560,000 subadult razorback suckers have been stocked in the Green and upper Colorado River subbasins. From 2004 to 2007 approximately 96,400 fish were stocked and 1,511 recapture events from 1,470 unique individuals were encountered from 2005 to 2008. In 2012, tag-reading antennae were placed on a spawning bar in the middle Green River near Dinosaur National Monument in northeast Utah. Fifty-two unique razorback sucker stocked between 2004 and 2010 were detected, 88 percent of which were not seen since stocking. During sampling for Colorado pikeminnow estimates, 938 and 765 razorback sucker were captured in 2011 and 2012, respectively, in the Ouray to Green River, Utah reach of the main channel of the Green River. In a monitoring plan (Bestgen et al. 2012), estimates of large juvenile to adult razorback sucker in three reaches of the Green River ranged from 474 to over 5,000 within a reach. Although these estimates are highly imprecise, they provide further confirmation that stocked fish are surviving in the wild. Razorback sucker abundance increased in all reaches of the Green River in recent years, largely from increased survival of stocked fish (Zelasko et al. 2018). Because of the successes in razorback sucker recovery, we published a 5-year review in 2018 proposing to reclassify razorback sucker from endangered to threatened status (USFWS 2018a).

Known spawning sites for razorback sucker are located in the lower Yampa River and in the Green River near Escalante Ranch, but other, less-used sites are probable, such as Desolation Canyon (USFWS 2002b). The species is a migratory spawner whose young emerge as larval fish from spawning locations and drift downstream. Because razorback sucker spawning locations occur upstream of the Project action area and known populations occur downstream of the Project action area, adults and larval razorback sucker must pass through the Project action area during reproductive cycles.

Humpback Chub

Four wild populations of humpback chub inhabit canyon-bound sections of the Colorado and Green Rivers: Desolation and Gray Canyons; Cataract Canyon; Black Rocks; and Westwater Canyon. Although humpback chub are primarily resident fish, some movement between populations is expected. The Project action area is upstream of the Desolation and Gray Canyons humpback chub population.

We estimated the Desolation/Gray Canyons population of wild adults at 1,300 in 2001, 2,200 in 2002, and 940 in 2003 (Jackson and Hudson 2005). Sampling in 2001 and 2002 was conducted in summer, whereas beginning in 2003, sampling was shifted to fall to avoid capturing Colorado pikeminnow that use Desolation Canyon for spawning. A report on 2006 to 2007 population estimates for humpback chub indicated that this population was trending downward (Badame 2012). The report linked declining catch of humpback chub in the upper portions of Desolation Canyon in the 2006 to 2007 estimates with increasing densities of nonnative smallmouth bass (*Micropterus dolomieu*). However, the most recent population estimate showed recent increases and stability with estimates of 1,863 humpback chub in 2014 and 1,672 in 2015 (Howard and Caldwell 2018). Because of the successes in humpback chub recovery, we published a 5-year review in 2018 proposing to reclassify humpback chub from endangered to threatened status (USFWS 2018b).

Bonytail Chub

Bonytail are so rare that it is currently not possible to conduct population estimates. In response to the low abundance of individuals, the Recovery Program implemented a stocking program to reestablish populations in the Upper Basin (Upper Colorado River Endangered Fish Recovery Program and San Juan River Basin Recovery Implementation Program 2010). Since 1996, over 600,000 tagged bonytail subadults were stocked in the Green and Upper Colorado River subbasins.

To date, stocked bonytail do not appear to be surviving as well as stocked razorback sucker. Researchers continue to experiment with pre-release conditioning and exploring alternative release sites to improve their survival. Since 2009, an increasing number of bonytail were detected at several locations throughout the Upper Colorado River Basin where stationary tag-reading antennas are used. During high spring flows in 2011, more than 1,100 bonytail (16.6 percent of the 6,804 stocked in early April of that year) were detected by antenna arrays in the breach of the Stirrup floodplain on the Green River. In 2015 and 2016, researchers documented natural bonytail reproduction for the first time since listing (Bestgen et al. 2017). Recent recaptures of bonytail in the Green River a year after stocking provide promising results that individuals are surviving.

To augment natural populations, the Recovery Program produces genetically diverse fish in hatcheries and stocks them in the river system. The stocking program is guided by an integrated stocking plan and utilizes at least seven fish hatcheries for propagation. In most years, the Recovery Program was successful at meeting stocking goals. In addition, the Recovery Program is working on research projects to improve the survivorship of stocked fish. Bonytail are stocked into the Green River, both upstream and downstream of the Project action area.

4.2 Status of Critical Habitat in The Action Area

4.2.1 Colorado River Fishes

The Project action area includes critical habitat units identified as essential for the species' recovery (USFWS 2002a, 2002b, 2002c, 2002d). This section of the Green and White Rivers are within designated critical habitat for the Colorado pikeminnow and razorback sucker and downstream portions of the action area include designated critical habitat for bonytail and humpback chub.

We identified water, physical habitat, and the biological environment as the physical or biological features of critical habitat for listed Colorado River fish species (59 FR 13374-13400). All four ESA-listed species evolved in desert river hydrology, relying on high spring flows and stable base flows for habitat conditions essential to their survival. In addition to main channel migration corridors, Colorado pikeminnow, bonytail, and razorback sucker rely on floodplain and backwater habitats for various stages of their life history. High spring flows also act as spawning queues (USFWS 2002a, 2002b, 2002d). In contrast, humpback chub rely more on canyon-bound reaches with swift currents and white water (USFWS 2002c). The physical and biological features for critical habitat are present within the action area, although sometimes affected by human activities as described below.

Physical or biological feature – water

Water includes a quantity of water of sufficient quality delivered to a specific location in accordance with a hydrologic regime required for the particular life stage for each species. Past projects have resulted in depletions and changes in flows that have affected the endangered Colorado River fishes. These native fishes are adversely affected by depletions to water flow at sensitive life-stages (Muth et al. 2000). Depletions may reduce high spring flows, resulting in changes to food supply and productivity. Reductions in water flows can reduce spawning habitat availability and adversely affect backwater habitats, resulting in lower habitat quality. Water depletions may also contribute to flow changes that favor nonnative fish species. Competition with nonnative fish species is a factor in the decline of the endangered Colorado River fishes and nonnative fishes are known to occupy the same backwaters that are very important for young Colorado pikeminnow and razorback sucker (Recovery Program 2014).

Physical or biological feature – physical habitat

The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. In addition, oxbows, backwaters, and other areas in the 100-year floodplain, when inundated, provide access to spawning, nursery, feeding, and rearing habitats.

The completion of Flaming Gorge Dam created a fish passage barrier. Native Colorado pikeminnow, razorback sucker, humpback chub, and bonytail can no longer migrate into Wyoming from the Green River. Fish barriers isolate populations, decreasing the ability of individuals to interact, and hinder the transfer of genetic material.

The quantity and timing of flows influence how channel and various habitats are formed and maintained. Channel narrowing is a problem because as the channel width decreases, water velocity increases, and the amount of low velocity habitats, important to the early life stages of the fish, decreases. Habitat below Flaming Gorge Dam has historically been shaped by an artificial flow regime, which resulted in decreased low flow habitats, disrupted vegetative communities, and altered channel morphology (Muth et al. 2000). However, recent operation changes have made this flow regime better match natural conditions. These changes have also improved temperature, channel morphology, and habitat conditions.

Physical or biological feature – biological environment

Food supply, predation, and competition are important elements of the biological environment (59 FR 13374-13400). The biological environment in the action area is impaired by the presence of nonnative fishes that are now common in the Green River. Nonnative fishes occupy the same backwaters that are very important for young Colorado pikeminnow and razorback sucker. Specifically, smallmouth bass, walleye (*Sander vitreus*), northern pike (*Esox lucius*), and channel catfish (*Ictalurus punctatus*) are present in this system and predate upon juvenile native fish. Programs are ongoing to remove bass, walleye, and northern pike from this system.

Other nonnatives found in the Green River include centrarchids (sunfishes) and nonnative cyprinids (minnows and carps). Reduction in flows contributes to further habitat alterations that support nonnative fish species, such as increased temperatures, reduced habitat availability, and reduced turbidity (Recovery Program 2014).

4.3 Factors Affecting Species within the Action Area

4.3.1 Barneby ridge-cress

The same threats, energy development and OHV use, as described above (see section 3.1, Status, Distribution, and Threats), are present in the action area with potential habitat for Barneby ridge-cress. This portion of the action area contains Ute Indian Tribe and private lands and has an existing highway (Highway 191), and unpaved access roads. Currently, there are no oil and gas wellpads where the species occurs in the action area. However, four wellpads are located in potential habitat within the action area. Oil and gas development and associated infrastructure (e.g., an access road crossing of the rail line) may continue to expand in the narrow area between the project footprint and the edge of the action area (300-ft). Future oil and gas exploration would result in increased road construction and road use and effects to the species from loss of plants and occupied habitat, habitat fragmentation, weeds, and dust generation, as discussed in more detail below (section 5.2, Effects to the Species).

OHV use occurs in this portion of the action area on unpaved access roads and undeveloped terrain. This portion of the action area is remote and difficult to regularly patrol and enforce illegal cross-country OHV use. Therefore, we anticipate OHV use and illegal OHV use will continue to occur. OHV use would result in effects to the species from plant damage and

mortality, habitat degradation, soil compaction, erosion, weed invasion and fugitive dust generation, as discussed in more detail below (section 5.2, Effects to the Species).

The existing Highway 191 supports approximately 2,200 vehicles per day within the action area (UDOT 2021). Some of this traffic may support oil and gas development and recreation including OHV use within other parts of the action area. The Highway 191 is paved and most of the access roads appear to be unpaved. Paved and unpaved roads may contribute to nonnative plant invasions from vehicle transport of plant parts and soil disturbances, as discussed in more detail below (section 5.2, Effects to the Species). We do not have information on the presence and extent of invasive or noxious weeds in Barneby ridge-cress habitat the action area.

Unpaved roads are large sources of fugitive dust. Dust accumulation within nearby habitat can negatively affect the growth and physiology of ESA-listed plants, as discussed in more detail below (section 5.2, Effects to the Species).

We do not have grazing information for the Ute Indian Tribe and private lands within the action area. We also do not have information regarding the palatability or extent of grazing by other herbivores (small mammals) to Barneby ridge-cress. Livestock grazing may negatively affect Barneby ridge-cress directly by crushing or uprooting individual plants or indirectly by spreading or introducing weeds into the habitat resulting in smaller or fewer plants.

4.3.2 Ute ladies'-tresses

Factors affecting Ute ladies'-tresses in the action area include habitat loss, modification of hydrology, invasive species, OHV use, and possibly livestock grazing, as described in the Status of the Species. This portion of the action area contains Ute Indian Tribe and private lands and has an existing highway (Highway 191), and unpaved access roads. Currently, there are no existing wellpads located in suitable habitat within the action area. The possibility of future oil and gas development and associated infrastructure (e.g., an access road crossing of the rail line) within the narrow area between the project footprint and the edge of the action area (300-ft) does exist, however is unlikely due to the narrow width of the area. Future oil and gas exploration would result in increased road construction and road use and effects to the species from loss of plants and occupied habitat, habitat fragmentation, weeds, and dust generation, as discussed in more detail below (section 5.3, Effects to the Species).

Modification of hydrology may have occurred as a result of constructing Highway 191, and water depletions associated with energy development in the action area. As noted in the survey report for Ute ladies'-tresses (HDR Inc. 2021b), numerous private property owners also divert water from Indian Canyon Creek for agricultural purposes, which further influences the unpredictable nature in the amount and timing of water flow throughout the canyon. Potential changes to hydrology may impact water flow, or surface or groundwater availability as compared to current conditions (Fertig et al. 2005). Hydrologic modification may result in plant mortality, habitat loss, and habitat degradation.

As discussed above in factors affecting Barneby ridge-cress within the Action Area, the use of OHVs continues to occur within the area and it is difficult to enforce against illegal use. This activity results in effects to the species from plant damage and mortality, habitat degradation, soil compaction, erosion, weed invasion and fugitive dust generation, as discussed in more detail below (section 5.3, Effects to the Species).

Paved and unpaved roads may also contribute to nonnative plant invasions from vehicle transport of plant parts and soil disturbances, as discussed in more detail below (section 5.3, Effects to the Species). Surveyors found areas of suitable habitat in the action area to be heavily invaded by invasive weeds (HDR Inc. 2021b).

We do not have grazing information for the Ute Indian Tribe and private lands within the action area. Livestock grazing may negatively affect Ute ladies'-tresses directly by crushing or uprooting individual plants or indirectly by spreading or introducing weeds into the habitat resulting in smaller or fewer plants. Livestock grazing may positively affect Ute ladies'-tresses indirectly by reducing weed and other vegetation cover in the habitat resulting in more favorable habitat conditions for the species.

4.3.3 Uinta Basin hookless cactus and Pariette cactus

The threats, energy development and livestock grazing, and possibly OHV use and illegal collection, as described above (section 3.3, Status, Distribution, and Threats), are present in the action area with potential habitat for Uinta Basin hookless cactus and Pariette cactus. This portion of the action area contains Tribal and private lands with relatively undeveloped habitat; a few unpaved access roads to wellpads and adjacent, agricultural lands; and four wellpads and three evaporation ponds associated with energy development. Additional oil and gas development could occur in the future in a narrow area between the project footprint and the edge of the action area (300-ft) that contains cactus plants and potential habitat. Existing and future oil and gas exploration would result in increased road construction and road use and effects to the species from loss of plants and occupied habitat, habitat fragmentation, weeds, and dust generation, as discussed in more detail below (section 5.4, Effects to the Species).

Livestock grazing and possibly feral horses occur on Ute Indian Tribe lands within this portion of the action area in undeveloped habitat. We do not have grazing information for the private lands within the action area. Livestock and feral horses directly affect Uinta Basin hookless cactus and Pariette cactus individuals and cause mortality or harm by trampling, kicking, scraping, and damaging the cactus stem, roots, or seeds. Severe damage may occur in heavily traveled areas such as watering areas, lambing areas, fences, and along trails (Clark et al. 2015). For cactus that survive initial damage, trampling can induce a survival response of producing branches, which has been extensively observed in Uinta Basin hookless cactus (Hornbeck 2020). Damage from trampling and induced branching reduces the overall viability of the cactus individual by depleting stored resources.

We do not know if OHV use and illegal collection occur within this portion of the action area. OHV use by energy companies or by recreationists accessing the area use can crush cacti and cause soil compaction, erosion, and sedimentation (USFWS 1990, BLM 2005). Injured or damaged cactus plants may persist for several years with reduced reproductive potential before recovering or succumbing to their injuries (Clark and Clark 2008, Clark et al. 2015). Increased access for humans can also result in increased illegal cactus collection and the direct mortality of individual cacti (USFWS 1990, BLM 2005).

4.3.4 Colorado River Fishes

As described in the introduction section of this biological opinion (see Upper Colorado River Recovery Program section above), we established the Upper Colorado River Endangered Fish Recovery Program in 1988 to help recover the four endangered fish species. The Recovery Program implements management actions within seven Program elements, as dictated from species' recovery goals, with the focus of down-listing and de-listing the species. Five of these actions affect the species in the action area: instream flow identification and protection; habitat restoration; non-native fish management; propagation and stocking; and research and monitoring.

Current management actions performed by the Recovery Program in the Project action area include, but are not limited to:

- Overseeing non-native fish removal activities in the Upper Colorado River basin. Nonnative fishes of immediate primary concern and currently explicitly targeted for management are northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieu*), and channel catfish (*Ictalurus punctatus*). These nonnative fish species pose significant threats to the endangered fishes because of their high or increasing abundance and range expansion, their habitat and resource requirements overlap with those of the endangered fish species, and they are known fish predators;
- Stocking of bonytail and razorback sucker into various locations in the Upper Colorado River Basin;
- Restoring instream and off-channel habitats for larval and juvenile fishes;
- Coordinating research projects, such as habitat use studies, population monitoring, and observing reproduction timing; and
- Participating in the workgroups for mainstem dams, such as Flaming Gorge Dam and the Aspinall Unit, to provide instream flows to benefit endangered fish species while meeting other legal purposes.

Nonnative Species

There are a number of nonnative species within the Colorado River basin that threaten native fish. Since the late 1800's, humans have introduced over 60 nonnative fish species (either as intentional stocking efforts or accidentally) into the Upper Colorado basin (Bezzarides and Bestgen 2002; Modde and Keleher 2003). Nonnative fishes threaten native species through predation (Tyus and Beard 1990; Bezzarides and Bestgen 2002) and competition (Osmundson 1999; Bezzarides and Bestgen 2002).

Nonnative fishes are common throughout the Colorado River basin. Nonnative fishes occupy the same backwaters that provide important habitat for young Colorado pikeminnow and razorback sucker. Largemouth bass (*Micropterus salmoides*) and green sunfish (*Lepomis cyanellus*) are the most common large-bodied fishes that occupy backwater habitats year-round (Osmundson 2003). The three most common small-bodied fishes found in backwaters are fathead minnow, sand shiner, and red shiner, comprising 80 to 100 percent of the fish found in Colorado River backwaters (McAda 2003). Programs are ongoing to remove bass, walleye, and northern pike from this system. Other non-natives found in the Colorado River include sunfishes, carp, and other non-native minnows. Reduction in flows contributes to further habitat alterations that support nonnative fish species, such as increased temperatures, reduced habitat availability, and reduced turbidity.

Endangered Fish Stocking

Each year tens of thousands of bonytail and razorback sucker are stocked into the main stem Green River. Two primary stocking locations are in the middle Green River near Ouray NWR and in the lower Green River at Green River State Park. Stocking these fish in the main stem river is designed to supplement the population and eventually create a self-sustaining population.

Water Development

Water development within the Colorado River basin has two primary impacts on the listed fish species. First, water withdrawals reduce habitat quantity and quality. Second, diversion structures create a barrier to fish movement. Water depletions reduce aquatic habitat quality. We analyzed the impact of water depletion to the Colorado River habitat in our 1999 programmatic biological opinion for the upper Colorado River above the confluence with the Gunnison River and our 2009 programmatic biological opinion for the Gunnison River to address Colorado River basin water operations (USFWS 1999; USFWS 2009). In those biological opinions, we noted that reduced flows caused by water development dramatically changed the Colorado River in several ways:

1. Removing water from the river system changes the natural hydrological regime that creates and maintains important fish habitats, such as spawning habitats, and reduces the frequency and duration of availability of these habitats of the four endangered fish;

2. Reduction in flow rates lessens the ability of the river to inundate bottomland, a source of nutrient supply for fish productivity and important nursery habitat for razorback sucker;
3. Water depletions move flow and temperature regimes toward conditions that favor nonnative fish, thus adding to pressures of competition and predation by these nonnative fishes as discussed above.

From of these hydrologic alterations, the Colorado River has a reduced ability to maintain native fish populations (USFWS 1999; USFWS 2009).

Water development can also create a barrier to fish movement (USFWS 1999; USFWS 2009). Diversion structures can present a complete barrier to fish movement. For less common native species, this can result in extirpation of the species along entire sections of the river. Additionally, these diversion structures may separate native fish from higher quality habitat. Upstream of the action area, several barriers have historically been a barrier to fish movement (Muth et al. 2000). We have worked with diversion operators to include fish passage structures on many of these water diversion structures in recent years and have documented nearly immediate use of upstream habitat after initial operation of fish passage structures (USFWS 2015).

In summary, water development has drastically altered the Colorado River system. Due to reduced flows, the river has a reduced ability to maintain native aquatic fish species. Further, diversion structures create a barrier to fish movement, thus isolating populations and preventing native fish from recolonizing sections of river where they have been extirpated (Muth et al. 2000).

Water Quality

Water withdrawal, agricultural and municipal effluents, and habitat modification affects the water quality in the Colorado River. Water withdrawals reduce the ability of the river to effectively transport sediments and other materials from the river channel (USFWS 1999; USFWS 2009). Extensive colonization by aquatic plants and algae occurs in the warmer temperature, reducing flow in the river channel and creating extreme daily dissolved oxygen fluctuations that are harmful to fish species. Agricultural and municipal effluents enrich production of aquatic vegetation, further affecting daily dissolved oxygen levels (USFWS 2002a; 2002b; 2002c; 2002d). These effluents can cause fish kills if significant runoff from agricultural and municipal properties occurs during low flow periods.

Runoff from agricultural pesticides and herbicides can also degrade water quality and affect Colorado River fishes. Pesticides and herbicide runoff can cause direct toxic effects on aquatic environments, including mortality of fish species or their food (USFWS 2002a; 2002b; 2002c; 2002d). Changes in water quality from agricultural runoff also alters habitat and may cause covered species to seek less preferred habitats. Habitat modification, including channelization, reduces habitat complexity and decreases the river's natural ability to cleanse pollutants. Reduction in riparian canopy above the river allows for increased daily river temperatures, forcing fish to seek thermal refugia (USFWS 2002a; 2002b; 2002c; 2002d).

Altered water quality during spawning periods can limit Colorado River fishes spawning success in remaining habitat in the Colorado River. Warmer river temperatures occur after spring runoff due to increased agricultural diversions. As these depletions occasionally reduce flows to critically low levels, increased river temperature and extremely low dissolved oxygen levels can occur and affect spawning success. Low dissolved oxygen levels, created by reduced river flows, may also cause mortality in eggs or larval fishes (USFWS 2002a; 2002b; 2002c; 2002d).

5 EFFECTS OF THE ACTION

In accordance with 50 CFR 402.02, effects of the action are all consequences to listed species or critical habitat that are caused by the Proposed Action, including the consequences of other activities that are caused by the Proposed Action. A consequence is caused by the Proposed Action if it would not occur but for the Proposed Action, and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17).

In this section, we first summarize potential effects that are common to all four ESA-listed plant species from Project activities. In subsequent subsections, we evaluate the effects to each plant species.

5.1 Effects Similar to all Plants

Effects of the action to ESA-listed plants includes plant mortality and permanent loss of occupied habitat and suitable habitat within the project footprint; soil compaction, erosion, and habitat degradation from construction and maintenance activities in occupied and suitable habitat; habitat fragmentation from the construction of additional access roads; effects to plant growth and reproduction from fugitive dust generation; the potential for encroachment of nonnative weeds from disturbance areas to occupied and suitable habitat; effects to pollinators and seed dispersers; and pesticide and herbicide use that affect plants, habitat and pollinators (Eller 1977; Everett 1980; Spatt and Miller 1981; McCrea 1984; Thompson et al. 1984; Santelmann and Gorham 1988; Farmer 1993; Sharifi et al. 1997; Trombulak and Frissell 2000; Hobbs 2001; Mustajarvi et al. 2001; Veranth et al. 2003; Etyemezian et al. 2004; Silver 2007; BLM 2008; Lewis 2013; Lewis 2016). There is potential for these effects to occur during all three phases of the Proposed Action, including the pre-construction, construction, and post-construction operation and maintenance phases.

The construction phase will involve clearing, excavating, and filling within the project footprint, which will result in the permanent loss or alteration of ESA-listed plants and their occupied and suitable habitat. The movement of heavy equipment and supplies during construction will compact the soil, which can affect plant germination and growth within the project footprint. Soil compaction can prevent seeds from germinating and make it difficult for roots to penetrate the soil surface. Vegetation removal and soil compaction would expose soil to erosion caused by rain and overland stormwater runoff, which could reduce soil quality and negatively affect vegetation and ESA-listed plants within and beyond the project footprint.

Construction and post-construction maintenance activities may introduce noxious and invasive weeds by bringing in materials from outside sources such as with dirt or gravel fill material, using seed mixtures contaminated with weed seeds, and on construction equipment.

Construction can disturb existing weed seedbanks allowing them to germinate and flourish in areas cleared of other vegetation. Noxious and invasive weeds introduced during construction activities would compete with native vegetation, including ESA-listed plants. Noxious and invasive weeds that encroach beyond the project footprint could out-compete ESA-listed plants and result in altered vegetation structure, a reduction in plant species richness, and overall disruption of the habitat (Forman and Alexander 1998; Gelbard and Belnap 2003).

Establishment and spread of noxious and invasive weeds can increase competition for water, space, and nutrients, resulting in the decreased reproductive success of ESA-listed plants (Forman and Alexander 1998; Forman 2000; Gelbard and Belnap 2003).

The operation of construction equipment will generate fugitive dust from loose soil.

Accumulation of fugitive dust on ESA-listed plants in or near the project footprint can affect plant growth by inhibiting photosynthesis and reducing plant density and plant diversity. Dust production is only anticipated during the construction phase of the Project and until areas cleared of vegetation are revegetated or otherwise stable and is not expected to continue during the operation of the rail line. Unpaved roads and surfaces are large sources of fugitive dust. Dust accumulation within nearby habitat can negatively affect the growth and physiology of ESA-listed plants (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al. 1997; Trombulak and Frissell 2000; Hobbs 2001). The distance from a road at which dust can affect vegetation varies (Everett 1980; Spatt and Miller 1981; McCrea 1984; Walker and Everett 1987; Santelmann and Gorham 1988; Myers-Smith et al. 2006), but negative effects to plant growth and reproduction may occur up to 300 ft away from dust sources during the growing and flowering season (Environmental Protection Agency (EPA) 1995; Veranth et al. 2003; Etyemezian et al. 2004; Padgett et al. 2007; Wijayratne et al. 2009; Lewis 2013, 2016; Waser 2017).

Operation of the rail line may release pollutants that negatively affect ESA-listed plant species. The two most important types of pollutants are polycyclic aromatic hydrocarbons (PAHs) and heavy metals (Wilkomirski et al. 2011). These substances occur naturally in the environment, but they are also found in manufactured substances such as asphalt, oil, coal, and creosote (Agency for Toxic Substances and Disease Registry 1995). The main sources of PAHs around rail lines are substances used for rolling stock use, such as machine grease, fuel oils, and transformer oils (Wilkomirski et al. 2011). Heavy metals in emissions and rail car materials can build up on plants and in soil near rail lines (Wilkomirski et al. 2011). Stormwater discharges from the railbed and access roads could convey low concentrations of these pollutants to vegetated areas. Some plant species accumulate and tolerate PAHs (BA pp. 6-13, Liu et al. 2009). However, PAHs can also stunt plant growth and affect root physiology (Liu et al. 2009). Heavy metals may inhibit growth, but some plants have resistance mechanisms against toxic effects (Cheng 2003). Any releases of PAHs and heavy metals associated with rail operations would be localized and could result in negative effects to plant growth and habitat degradation.

Operation of the rail line may contribute to wildfires by providing an ignition source. The two most common ignition sources associated with railroads are exhaust sparks (carbon particles, such as chunks or flakes) emitted from the locomotive engine and hot brake shoe fragments (California Department of Forestry and Fire Protection 1999). Effect to ESA-listed plants may vary, depending on terrain, vegetation type, weather conditions at the time of the wildfire, and the prevention and suppression efforts. The probability of a train-induced wildfire will be very low for several reasons, including improvements in locomotive technology and the fact that trains make up a small percentage of fire starts (STB 2021, Table 6-2). Additionally, the fire risk in most of the action area is very low, low, or moderate (STB 2021).

Habitat fragmentation associated with the construction of the project has the potential to negatively affect ESA-listed plants. Increased habitat fragmentation and reduced habitat connectivity can negatively affect plant density, genetic variability, and population viability (Gilpin and Soule 1986; Mustajarvi et al. 2001) and has the potential to exert a cascading effect through a plant community by modifying plant-pollinator interactions and exacerbating edge-effects (Ellstrand and Elam 1993; Young et al 1999; Debinski and Holt 2000; Mustajarvi et al. 2001).

Erosion and runoff from surface disturbing activities can have direct effects to individual plants from burial or direct loss. Erosion and runoff can be natural events but can be worsened by human activities associated with construction of the rail line such as vegetation removal and alteration of stream courses, making these events more frequent.

Induced growth and development associated with the railroad may negatively affect ESA-listed plants that occur outside of the action area. Growth inducing effects and other effects are related to changes in the pattern of land use, the density or growth rate of that land use, and related effects on air and water and other natural systems, including ecosystems (as defined under NEPA, 40 CFR 1508.8). These effects can also result from incremental changes in land uses attributable to a transportation project that, for example results in population growth (including rate or pattern) and development in a manner that would not have otherwise occurred (Tidd et al. 2013). The Project would provide a viable means of freight transport (crude oil, mineral and agricultural products) to and from the Uinta Basin as an alternative to the existing but limited road network (Uinta Basin Railway Final EIS Chapter 1 2021). The Project may support an increased growth rate of oil and gas commercial development in the Uinta Basin and shorten the time to reach full field development within delineated oil and gas fields than with the existing road network (Utah Geological Survey 2018). Energy development has the potential to negatively affect ESA-listed plant species as a result of plant and habitat loss, habitat fragmentation, increased fugitive dust generation, and weed invasions. Where there is a Federal nexus, we will have the opportunity to consult on future energy development and effects to ESA-listed plants.

The Project may reduce one constraint (transportation costs) associated with the profitability of the oil shale and tar sands industries, but additional constraints remain (e.g., water availability to support production) as well as the uncertainties involved in predicting profitability of commercial operations (e.g., estimating the threshold or hurdle price of crude oil given the high capital costs) (Bartis et al. 2005; Institute for Clean and Secure Energy 2013; Spinti et al. 2013;

BLM 2017). Unlike commercial oil and gas development, there are no commercial operations of oil shale and tar sands currently in the Uinta Basin and we do not have reasonable certainty that this Project may induce growth and development of these industries.

5.2 Barneby ridge-cress

Based on Project designs identified in the BA and the survey results to-date (HDR Inc 2021a), the Project footprint may result in the loss of 269 Barneby ridge-cress known plants and 52 ac of occupied habitat. There are some data gaps regarding the total number and location of Barneby ridge-cress plants on private lands in the action area. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate of effects to 78 additional plants within the 15 unsurveyed acres of the Project footprint. This estimate is based on the known plant density of occupied habitat within the Project footprint (5.17 plants per acre) which totals 78 plants (5.17 plants x 15 ac = 78) (HDR, 2021a, USFWS 2021b). Therefore, the Project footprint may result in the maximum loss of 347 Barneby ridge-cress plants (269 + 78). This number represents 3.6 percent of the total Barneby ridge-cress population and approximately four percent of the Indian Canyon population. We anticipate this reasonable upper bound of Barneby ridge-cress plant loss will be greater than the actual plant loss. The total number of Barneby ridge-cress mortalities from the Proposed Action will be documented and reported prior to construction.

We expect the conservation measures implemented by STB and the Project applicants will reduce the permanent loss of Barneby ridge-cress plants, occupied habitat, and potential habitat, and minimize the effects of fugitive dust, weeds, and erosion outside of the Project footprint and within the 300 ft survey buffer of the action area.

5.3 Ute ladies'-tresses

In addition to the effects common to all ESA-listed plants described above, Ute ladies'-tresses may also be vulnerable to additional disturbances resulting from Project related effects to the hydrology of streams and seeps. Potential changes to hydrology may affect water flow, or surface or groundwater availability as compared to current conditions (Fertig et al. 2005). Hydrologic modification may result in permanent loss of Ute ladies'-tresses plants and habitat. Decreases in groundwater and stream flows can render the habitat too dry for Ute ladies'-tress and decreases in the frequency and magnitude of floods can both decrease water availability and fail to maintain habitat in an appropriate successional stage. Increases in groundwater and stream flows can cause sites to become too saturated to support Ute ladies'-tresses. High flows and increased frequency and magnitude of flooding events can also destroy habitat and wash away individuals (Fertig et al. 2005). The STB and Project applicants committed to avoid altering site hydrology and concentrating water flows or sediments into Ute ladies'-tresses occupied habitat to the extent practicable.

As detailed in the Ute ladies'-tresses Survey Report (HDR Inc. 2021b), there were locations within the survey area that no longer contain the characteristics of suitable habitat for the species. Surveyors noted the invasion of upland species in multiple locations, several dry reaches of Indian Canyon Creek, and numerous private property water diversions from Indian Canyon Creek for agricultural purposes. Based on these observations from the first year of Ute ladies'-tresses surveys (2021), the habitat is likely marginally suitable and may possibly be unsuitable for the species.

Based on Project designs identified in the BA and the survey results to-date (HDR Inc. 2021b), the Project footprint may possibly result in no loss of Ute ladies'-tresses plants or occupied habitat. However, there are some data gaps because three consecutive years of surveys have not been performed to-date. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate of plant effects to individuals within the suitable habitat in the Project footprint. This analysis is based on a comparison of a 2013 survey at a nearby occupied site for the species and the results of the preliminary survey report (HDR Inc. 2021b). The HDR survey report shows 11.39 ac of suitable habitat within the action area with approximately 4 ac within the Project footprint. This suitable habitat for Ute ladies'-tresses within the Project footprint is along approximately 1.2 mi (2 linear kilometers[km]) of river. The nearest Ute ladies'-tresses site for which we can verify occupancy within the last ten years is approximately 1.37 mi (2.2 km) north of Duchesne along the Duchesne River and is 6.8 mi (11 km) from the Ute ladies'-tresses habitat within the Project footprint. At this Duchesne location, in 2013, 29 bloom stems of Ute ladies'-tresses were recorded at six points along 0.43 mi (0.7 km) of the Duchesne River, or an occurrence rate of 67.4 plants per mile (41.4 stems per km) of linear riparian habitat. Therefore, we estimate the potential impacts within the Project footprint may result in the destruction of approximately 81 plants (1.2 linear mi at 67.4 stems per mile or 2 linear kms at 41.4 stems per km) which represent less than one percent of the range-wide population. We anticipate this reasonable upper bound of Ute ladies'-tresses mortalities will be greater than the actual number of Ute ladies'-tresses that are destroyed. The total number of Ute ladies'-tresses mortalities that result from the Proposed Action will be documented and reported prior to construction.

We expect the conservation measures implemented by STB and the Project applicants will likely avoid or limit the destruction of Ute ladies'-tresses occupied and suitable habitat and minimize the effects of fugitive dust, weeds, and erosion outside of the Project footprint and within the action area.

5.4 Pariette and Uinta Basin hookless cactus

Based on Project designs identified in the BA and our database information, the Project footprint will result in 56 Uinta Basin hookless cactus mortalities and the destruction of 504 ac of habitat (56 ac Core 1 habitat + 127 ac Core 2 habitat + 321 suitable habitat). There are some data gaps regarding the total number and location of Uinta Basin hookless cactus in the action area since clearance surveys have not been performed. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate based on the density of Uinta Basin hookless cactus in the Myton core 1 and core 2 area and the acres affected. Based on the average density within the Myton core 1 and core 2 area (0.52 cacti per acre), the average density in the

suitable habitat (0.006 cacti per acre), and the number of known individuals present, it is reasonable to estimate an upper bound of 153 (95 + 2 + 56 known cacti) Uinta Basin hookless cactus mortalities within the Project footprint (USFWS 2021b). Therefore, the Project footprint may result in the destruction of 153 Uinta Basin hookless cactus which represents less than one percent of the total population. We anticipate this reasonable upper bound of plant loss will be greater than the actual number of Uinta Basin hookless cactus destroyed. The total number of Uinta Basin hookless cactus mortalities that result from the Proposed Action will be documented and reported prior to construction.

Based on Project designs identified in the BA and our database information, the Project footprint will result in 206 Pariette cactus mortalities and the destruction of 504 ac of habitat (56 ac Core 1 + 127 ac Core 2 + 321 suitable habitat). There are some data gaps regarding the total number and location of Pariette cactus in the action area since clearance surveys have not been performed. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate based on the density of Pariette cactus in the Myton core 1 and core 2 area and the acres affected. Based on the average density within the Myton core 1 and core 2 area (0.35 cacti per acre), the average density within the suitable habitat area (0.018 cacti per acre), and the number of known individuals present, it is reasonable to estimate an upper bound of 276 (64 + 6 + 206 known cacti) Pariette cactus mortalities within the Project footprint (USFWS 2021b). Therefore, the Project footprint may result in the destruction of 276 plants, which represents less than one percent of the total population. We anticipate this reasonable upper bound of plant loss will be greater than the actual number of Pariette cactus destroyed. The total number of Pariette cactus mortalities that result from the Proposed Action will be documented and reported prior to construction.

For both cactus species, the Project will result in a one percent increase in disturbance within the Myton core 1 and core 2 habitat. We expect the conservation measures implemented by STB and the Project applicants will minimize the loss of plants, occupied habitat, and potential habitat, and minimize the effects of fugitive dust, weeds, and erosion outside of the Project footprint and in the 300 ft survey buffer of the action area.

5.5 Colorado River Fishes

The Project footprint and the water depletion associated with the Project occurs outside of the occupied range of the four Colorado River fishes. The only effects from the Project are the water depletion effects to the four Colorado River fishes. Therefore, we are only considering the effects of the water depletion to the four Colorado River fishes for this Project.

Reductions in water availability can increase the likelihood of water quality issues, increasing fish vulnerability to predation, and reducing breeding opportunities by shrinking the amount of breeding habitat within their range. Depletions may affect water quality in the action area by increasing concentrations of heavy metals, selenium, salts, pesticides, and other contaminants. Increases in water depletions cause associated reductions in dilution potential for any contaminants that enter the river. Increased contaminant concentrations in the river may result in an increase in the bioaccumulation of these contaminants in the food chain, with negative effects to the endangered fishes, particularly the predatory Colorado pikeminnow.

Selenium is of particular concern due to its effects on fish reproduction and its tendency to concentrate in low velocity areas that are important habitats for Colorado pikeminnow and razorback suckers (Hamilton et al. 2005).

Reduced flows from water depletions can also result in habitat alteration in river systems that affect endangered Colorado River fishes. Depletions can reduce high spring flows, resulting in reductions to food supply and productivity. Reductions in flows also reduce spawning habitat availability and adversely affect low-velocity backwater habitats important for juvenile fishes (Muth et al. 2000), as the quantity and timing of flows influence how the channel and various habitats are formed and maintained. Reductions in spring peak flows and summer base flows caused by water depletions allow vegetation to encroach the river channel, which harden the riverbanks and cause channel narrowing. Channel narrowing negatively affects Colorado River fishes habitats, because as the channel width decreases, water velocity increases, and the amount of low velocity habitats important to the early life stages of the fish decreases (Muth et al. 2000).

Reduced flows and habitat alteration from water depletions also contribute to an increase in nonnative fish populations. Reduction in flows contributes to further habitat alterations that support nonnative fish species, such as increased temperatures, reduced habitat availability, and reduced turbidity (Recovery Program 2014). Endangered fishes within the action area may experience increased competition and predation as a result.

The Project will affect Colorado River fishes by reducing the amount of water in the river system upon which they depend by up to 875 acre-feet per year. Over the last ten years, the average annual flow of the Green River closest to the project area (Jensen, Utah) was approximately 2,706,000 acre-feet of water (USGS 2021). Therefore, the 875 acre-feet per year represents approximately 0.032 percent of annual flow in the action area. Because of the small depletion amount relative to the annual flow in the action area, we do not expect any noticeable changes to water quantity or quality from the Project itself.

6 CUMULATIVE EFFECTS

Cumulative effects “...are those effects of future state, or private activities, not involving Federal activities that are reasonably certain to occur in the action area of the Federal action subject to consultation” (50 CFR section 402.02). We do not consider future federal actions that are unrelated to the Proposed Action in this section because they require separate consultation pursuant to section 7 of the ESA.

6.1 Plant Species

Cumulative effects to the ESA-listed plants would include, but are not limited to, the following broad types of impacts:

- Increased recreational and economic use of the area as a result of increased travel access.
- Changes in land use patterns or practices that adversely affect a species' occupied and suitable habitat, including encroachment of human development into those habitats.

- Management actions by some, or all, of the following groups, on lands adjoining or upstream of the Project:
 - State of Utah
 - County governments in Utah
 - Local governments in Utah
 - Private landholders in Utah

ESA-listed plants are susceptible to effects from activities on State and private lands. Many of these activities, such as oil and gas development, livestock grazing, human population expansion and associated infrastructure (increased trails and roads) development, and recreation activities (including OHV use and any activities that increase human presence), are expected to continue on State and private lands within these species' ranges. All of these activities have the potential to affect the ESA-listed plant species by increasing mortalities, injuring plants, and further adversely impacting occupied and suitable habitat.

6.2 Colorado River Fishes

Declines in the abundance or range of Colorado River fishes and their critical habitats are attributed to various human activities on federal, state, and private lands, such as the following:

- human population expansion and associated infrastructure development;
- water retention, diversion, or dewatering of springs, wetlands, or streams;
- recreation, including off-road vehicle activity; and
- introductions of nonnative plants, wildlife, or fish or other aquatic species, which can alter native habitats, out-compete, or prey upon native species.

We expect many of these activities will continue on state and private lands and could contribute to cumulative effects to the species within the Project action area.

Other reasonably foreseeable future activities include land development, fire management, irrigation, and recreational activities. Implementation of these projects will likely affect the environment through several mechanisms including water quality, water rights, and wildlife resources.

Cumulative effects to Colorado River fishes include the following types of effects:

- changes in land use patterns that further fragment, modify, or destroy potential spawning sites, breeding sites, occupied habitat and designated critical habitat;
- shoreline recreational activities and encroachment of human development that remove upland or riparian/wetland vegetation and potentially degrade water quality;
- competition with, and predation by, nonnative fish species introduced by anglers or other sources; and
- additional water depletions reducing habitat quality and quantity.

As described in the Environmental Baseline section above, the Recovery Program has implemented various actions to offset many of the impacts associated with these types of projects. Such actions include securing instream flows, improving fish passage around fish barriers, reducing entrainment from diversions, removing nonnative fishes, and stocking of razorback sucker and bonytail chub to increase populations. We expect the implementation of Recovery Program actions will continue to offset adverse effects to Colorado River fishes associated with these types of projects.

7 CONCLUSION

7.1 Barneby ridge-cress

After reviewing the current status of Barneby ridge-cress, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence of Barneby ridge-cress.

We base our conclusion on the following:

- We estimate the Project will result in a maximum of 347 Barneby ridge-cress mortalities in the Indian Canyon population, which represents 3.6 percent of the known range-wide population (9,768 plants).
- A maximum of 67 ac (52 ac known occupied plus 15 ac unsurveyed habitat) (6.8 percent) of occupied habitat will be directly affected by the Project footprint;
- We estimate the Project will indirectly affect approximately 1,974 Barneby ridge-cress plants in the 300 ft survey buffer of the action area through fugitive dust deposition, weed encroachment, erosion, and habitat fragmentation. This represents 20 percent of the known range-wide population.
- The Project will not affect the remaining 8,651 plants in the Indian Canyon population and the other two populations (27 and 1,090 individuals), comprising approximately 9,768 plants (88.5 percent of the known range-wide population). The remaining relatively large number of plants would continue to persist in relatively intact habitat and contribute to the recovery of Barneby ridge-cress.
- Site specific species surveys will be conducted and provided to our office prior to Project construction.
- Commitments by the STB and the Project applicants to implement species specific avoidance, minimization, and conservation measures.
- Commitments by the STB and the Project applicants to offset effects to Barneby ridge-cress by providing a combination of permanent habitat protections, habitat improvements, recovery oriented research, and voluntary funding for conservation actions.

7.2 Ute ladies'-tresses

After reviewing the current status of Ute ladies'-tresses, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence Ute ladies'-tresses.

We base our conclusion on the following:

- We estimate the Project will result in approximately 81 Ute ladies'-tresses mortalities, which represents less than one percent of the known range-wide population.
- The Project will not affect the remaining approximately 83,246 individual plants in the estimated 53 populations across the range of the species (Fertig et al. 2005). The remaining relatively large number of plants would continue to persist and contribute to the recovery of Ute ladies'-tresses. Site specific species surveys will be conducted and provided to our office prior to Project construction.
- Commitments by the STB the Project applicants to implement species specific avoidance, minimization, and conservation measures.
- Commitments by the STB the Project applicants to mitigate effects to Ute ladies'-tresses by providing a combination of permanent habitat protections, habitat improvements, recovery oriented research, and voluntary funding for conservation actions.

7.3 Uinta Basin hookless cactus and Pariette cactus

After reviewing the current status of Uinta Basin hookless cactus and Pariette cactus, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence of Uinta Basin hookless cactus and Pariette cactus.

We base our conclusion on the following:

- We estimate the Project will result in approximately 153 Uinta Basin hookless cactus mortalities, which represents less than one percent of the known range-wide population.
- We estimate the Project will result in approximately 276 Pariette cactus mortalities, which represents less than one percent of the known range-wide population.
- We estimate that the Project will result in the destruction of 504 ac of habitat, which represents less than one percent of the range-wide habitat for the Uinta Basin hookless cactus and less than one percent of the range-wide habitat for Pariette cactus.
- Commitments by the STB the Project applicants to implement species specific avoidance, minimization, and conservation measures identified in Appendix A of this BO.
- Commitments by the STB and the Project applicants to mitigate effects to Uinta Basin hookless and Pariette cactus by either implementing successful habitat restoration or providing a voluntary contribution to the Sclerocactus Conservation fund, as specified in the USFWS "2014 Ecological Restoration Mitigation Calculation Guidelines for impacts to *Sclerocactus wetlandicus* and *Sclerocactus brevispinus*."
- Commitments by the STB and the Project applicants to mitigate effects to Uinta Basin hookless and Pariette cactus by either implementing successful habitat restoration or providing a voluntary contribution to the Tribal Sclerocactus Conservation Fund, as specified in the 2015 Ute Indian Tribe's *Sclerocactus* Management Plan for the Uintah and Ouray Indian Reservation (Ute Indian Tribe 2015).
- Commitment to coordinate with our office and the Ute Indian Tribe on the final restoration or payment amount after species surveys are completed.

7.4 Colorado River Fishes

After reviewing the current status of the four Colorado River fishes, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence of Colorado River fishes or result in destruction or adverse modification of designated critical habitat from the depletion of 875 acre-feet of water per year from the upper Colorado River basin. This water depletion represents approximately 0.032 percent of annual flow in the action area, it is a small depletion amount relative to the annual flow in the action area, and thus we do not expect any noticeable changes to water quantity or quality from the Project itself. In addition, the Recovery Program serves as an appropriate conservation measure and adequately addresses any effects to the species. Therefore, no additional conservation measures are necessary to reduce effects from the Proposed Action.

8 INCIDENTAL TAKE STATEMENT

8.1 Plants

Sections 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the ESA prohibits the removal and reduction to possession of ESA-listed plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

8.2 Colorado River Fishes

Estimating the number of individuals of Colorado River fishes that would be taken as a result of water depletions is difficult to quantify for the following reasons: (1) determining whether an individual forwent breeding as a result of water depletions versus natural causes would be extremely difficult to determine; (2) finding a dead or injured listed fish would be difficult, due to the large size of the action area and because carcasses are subject to scavenging; (3) natural fluctuations in river flows and species abundance may mask depletion effects, and (4) effects that reduce fecundity are difficult to quantify. However, we believe the level of take of these species can be monitored by tracking the level of water reduction and adherence to the Recovery Program recovery activities. Specifically, if the Recovery Program (and relevant RIPRAP measures) is not implemented, or if the current anticipated level of water depletion is exceeded, we fully expect the level of incidental take to increase as well. Therefore, we exempt all take in the form of harm that would occur from the removal of 875 acre-feet of water per year. Water depletions above the amount addressed in this biological opinion would exceed the anticipated level of incidental take and are not exempt from the prohibitions of section 9 of the Act.

The implementation of the Recovery Program is intended to minimize impacts of water depletions, therefore, support of Recovery Program activities by the STB as described in the Proposed Action exempts the STB, other action agencies, and the Project applicants from the prohibitions of section 9 of the ESA. The STB is responsible for reporting to us if the amount of average annual depletion is exceeded.

Effect of the Take

As described in the Conclusion (section 7), we determined the Project is not likely to jeopardize the continued existence of Colorado River fishes and does not result in destruction or adverse modification of designated critical habitat for Colorado River fishes.

Reporting Requirements

If any Barneby ridge-cress, Ute ladies' tresses, or Uinta Basin hookless cactus, Pariette cactus, or Colorado River fishes are injured, damaged, or killed during construction activities, STB or the other action agencies must immediately notify our Utah Ecological Services Field Office at (801) 975-3330. Pertinent information including the date, time, and location shall be recorded and provided to us.

9 RE-INITIATION NOTICE – CLOSING STATEMENT

This concludes formal consultation on the proposed Uinta Basin Railway Project. As provided in 50 CFR section 402.16, reinitiation of formal consultation "...is required and shall be requested by the Federal agency or the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law" and:

1. If the amount or extent of taking specified in the Incidental Take Statement is exceeded.
2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
3. If the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion.
4. If a new species is listed or critical habitat designated that may be affected by the identified action.

To reinitiate section 7 consultation, STB should immediately notify our office by phone or email if any of the four reinitiation clauses are triggered.

Thank you for your coordination in preparing the biological assessment and your interest in conserving threatened and endangered species. If we can be of further assistance, please contact Rita Reisor at (385) 285-7923.

Sincerely,

YVETTE CONVERSE

Digitally signed by YVETTE
CONVERSE
Date: 2021.09.20 12:18:07 -06'00'

Utah Field Office Supervisor

cc: Jason Gibson, Utah /Nevada Regulatory Section Chief, US Army Corps of Engineers,
Bountiful, UT
Kristy Groves, District Ranger, Duchesne/Roosevelt Ranger District, US Forest Service
Ashley National Forest, Duchesne, UT
Shered Mullins, Acting Lands and Realty Branch Chief, Bureau of Land Management
Utah State Office, Salt Lake City, UT
Lance Porter, District Manager, Bureau of Land Management Green River District,
Vernal, UT,
Chip Lewis, Regional Environmental Protection Officer, Bureau of Indian Affairs-
Western Region, Phoenix, AZ]
Tom Chart, Upper Colorado River Endangered Fish Recovery Program, Lakewood, CO
Kevin McAbee, Upper Colorado River Endangered Fish Recovery Program, Lakewood,
CO

10 LITERATURE CITED

- Agency for Toxic Substances and Disease Registry. 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Services, Centers for Disease Control.
- Allison, T.D. 2001. *Spiranthes diluvialis*: an evaluation of treatment effects and survey results. Report prepared for the City of Boulder Department of Open Spaces and Mountain Parks.
- Arft, A.M. 1995. The genetics, demography, and conservation management of the rare orchid *Spiranthes diluvialis*. PhD dissertation. University of Colorado, Boulder, CO.
- Arroyo-Cosultchi, G., Golubov, J., Mandujano, M.C., 2016. Pulse seedling recruitment on the population dynamics of a columnar cactus: effect of an extreme rainfall event. *Acta Oecol.* 71, 52–60.
- Badame, P. 2012. Population estimates for humpback chub (*Gila cypha*) in Desolation and Gray Canyons, Green River, Utah 2006-2007. Final Report of Utah Division of Wildlife Resources to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.
- Bartis. J.T., T. LaTourrette, L. Dixon, D.J. Peterson, and G. Cecchine. 2005. Oil Shale Development in the United States, Prospects and Policy Issues. Prepared for the National Energy Technology laboratory of the USDOE. Rand Infrastructure, Safety, and Environment. 90 pp.
- Bestgen, K.R., J. A. Hawkins, G. C. White, C. D. Walford, P. Badame, and L. Monroe. 2010. Population status of Colorado pikeminnow in the Green River Basin, Utah and Colorado, 2006-2008. Final Report to the Upper Colorado River Endangered Fish Recovery Program, U. S. Fish and Wildlife Service, Denver. Larval Fish Laboratory Contribution 161.
- Bestgen, K.R., K.A. Zelasko, and G.C. White. 2012. Monitoring reproduction, recruitment, and population status of razorback suckers in the Upper Colorado River Basin. Final Report to the Upper Colorado River Endangered Fish Recovery Program, U. S. Fish and Wildlife Service, Denver. Larval Fish Laboratory Contribution 170.
- Bestgen, K.R., R.C. Schelly, R.R. Staffeldt, M.J. Breen, D.E. Snyder & M.T. Jones. 2017. First Reproduction by Stocked Bonytail in the Upper Colorado River Basin. *North American Journal of Fisheries Management*, 37:2, 445-455.
- Bestgen, K.R., C.D. Walford, G.C. White, J.A. Hawkins, M.T. Jones, P.A. Webber, M. Breen, J.A. Skorupski Jr., J. Howard, K. Creighton, J. Logan, K. Battige, and F.B. Wright. 2018. Population Status and Trends of Colorado pikeminnow in the Green River Sub-Basin, Utah and Colorado, 2000-2013. Final Report of the Larval Fish Laboratory, Colorado State University to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Bezzerrides, N., & K.R. Bestgen. 2002. Status review of roundtail chub *Gila robusta*, flannelmouth sucker *Catostomus latipinnis*, and bluehead sucker *Catostomus discobolus* in the Colorado River Basin. Colorado State University, Fort Collins, Colorado.

BIO-Logic Natural Resource Consultants. 2015. A Study of the Impacts of Oil & Gas Development on *Phacelia submutica* and *Sclerocactus* spp., Final Report for contract DNR DQ#PJA-1139. Prepared for Colorado Natural Areas Program and the Project Research Panel. Prepared by S. Boyle, R. Alward, and V. Tepedino, BIO-Logic Montrose CO. 81401. Pp. 73

Black, R. and K. Gruwell. 2004. Ute ladies'-tresses survey, Diamond Fork Canyon, Utah. Year-End Report 2004. Report prepared for the Central Utah Water Conservancy District by HDR Inc., Salt Lake City, UT.

Black, R., K. Gruwell, and A. Hreha. 1999. Diamond Fork Canyon Ute ladies'-tresses year end monitoring report – 1999. An analysis of flows, canyon-wide population counts, and plant demography. Report prepared for Central Utah Water Conservancy District Environmental Programs by Michael Baker Jr., Inc.

Björk, Curtis. 2007. *Spiranthes diluvialis* Sheviak (ORCHIDACEAE). Madroño 54: 366-367.

Bureau of Land Management (BLM). 2008. Vernal Resource Management Plan, Record of Decision and Final Environmental Impact Statement. Vernal Field Office, Vernal, Utah, October 2008.

BLM. 2017. Final Rule to amend the Federal oil shale management regulations. 43 CFR Parts 3900, 3920, and 3930. 93 pp.

California Department of Forestry and Fire Protection, Bureau of Land Management, Union Pacific, Burlington Northern Santa Fe, and U.S. Forest Service. 1999. Railroad Fire Prevention Field Guide. Available: <https://osfm.fire.ca.gov/media/8480/fppguidepdf100.pdf>. Accessed: April 3, 2020.

Cheng, S. 2003. Effects of heavy metals on plants and resistance mechanisms. *Environmental Science and Pollution Research* 10(4):256–264.

Christen, D.C. and G.R. Matlack. 2009. The habitat and conduit functions of roads in the spread of three invasive plant species. *Biological Invasions* 11:453-465.

Cordell-Stine, K.A., and V.R. Pope. 2008. Ute Ladies'-tresses (*Spiranthes diluvialis*) Surveys, Rocky Reach Reservoir (Columbia River), 2008. Unpublished report by Fish and Wildlife Department, P.U.D. No. 1 of Chelan County, Wenatchee, WA 98807-1231. 8 p.

Croft, A. 2021. "Lepidium barnebyanum". Email to Rita Reisor (USFWS) and Mindy Wheeler. Environmental Scientist/Biologist, HDR. 3 pp.

- Debinski, D.M. and R.D. Holt. 2000. Review: A Survey and Overview of Habitat Fragmentation Experiments. *Conservation Biology* 14(2): pp. 342 – 355.
- Eller, B.M. 1977. Road dust induced increase of leaf temperature. *Environmental Pollution* 13(2): 99 – 107.
- Ellstrand, N.C. and D.R. Elam. 1993. Population genetic consequences of small population size: implications for plant conservation. *Annual Review of Ecology and Systematics* 24: 217-242.
- Environmental & Engineering Consulting (EIS). 2014. Threatened and Endangered Species Inventories and Habitat Delineations Summary 2014. Duchesne and Uintah Counties, Utah. 94 pp.
- Environmental Protection Agency (EPA). 1995. Chapter 13: Miscellaneous Sources, 13.2 Introduction to fugitive dust sources in AP 42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume I: Stationary point and area sources. Office of Air Quality Planning and Standards, Office of Air and Radiation, Research Triangle Park, NC
- Etyemezian, V., S. Ahoen, D. Nikolic, J. Gilles, H. Kuhns, D. Gillette and J. Veranth. 2004. Deposition and removal of fugitive dust in the arid southwestern United States: Measurements and model results. *Journal of the Air and Waste Management Association* 54(9): 1099-1111.
- Everett, K.R. 1980. Distribution and properties of road dust along the northern portion of the Haul Road. Pp. 101–128 in J. Brown and R. Berg, editors. *Environmental engineering and ecological baseline investigations along the Yukon River–Prudhoe Bay Haul Road*.
- Farmer, AM. 1993. *The Effects of Dust on Vegetation – A Review*. *Environmental Pollution*. 79: 63-75.
- Fertig et al. 2005. Rangewide status review of Ute ladies'-tresses (*Spiranthes diluvialis*). Prepared for the U.S. Fish and Wildlife Service and the Central Utah Water Conservancy District. September 30, 2005. 101 pp.
- Flory, S.L., and K. Clay. 2006. Invasive shrub distribution varies with distance to roads and stand age in eastern deciduous forest in Indiana, USA. *Plant Ecology* 184:131-141.
- Forman, R.T. 2000. Estimate of the Area Affected Ecologically by the Road System in the United States. *Conservation Biology* 14(1): pp. 31 – 35.
- Forman, R.T. and L.E. Alexander. 1998. Roads and their major ecological effects. *Annual Review of Ecology and Systematics* 29:207–231.

- Forman R.T., Sperlinger, D. Bissonette, J.A., Clevenger, A. P., Cutshell, C. D., Dale, V.H., Fahrig, L., France, R., Goldman, C.R., Heanue, K., Jone, J.A., Swanson, F.J., Turrentine, T., and Winter, T.C. 2003. Road ecology: science and solutions. Island Press, Covelo, CA
- Gelbard, J. and J. Belnap. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. *Conservation Biology* 17(2):420-432.
- Gilpin, M.E., and M.E. Soule. 1986. Minimum Viable Populations: Processes of Species Extinction. Chapter 2 of *Conservation Biology, The Science of Scarcity and Diversity*, ed by Michael E. Soule.
- Godínez-Álvarez, H., T. Valverde, and P. Ortega-Baes. 2003. Demographic trends in the Cactaceae. *The Botanical Review*. 69(2):173–203.
- Gonzalez, P., G.M. Garfin, D.D. Breshears, K.M. Brooks, H.E. Brown, E.H. Elias, A. Gunasekara, N. Huntly, J.K. Maldonado, N.J. Mantua, H.G. Margolis, S. McAfee, B.R. Middleton, and B.H. Udall. 2018. Southwest. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1101–1184. doi: 10.7930/NCA4.2018.CH25
- Hamilton, S.J., K.M. Holley, K.J. Buhl, and F.A. Bullard. 2005. Selenium impacts on razorback sucker, Colorado River, Colorado: II. Eggs. *Ecotoxicology and Environmental Safety* 61:32-43.
- Harding, K. T. 2017. Thesis: *Sclerocactus wetlandicus*: Habitat characterization, seed germination and mycorrhizal analysis. All Graduate Theses and Dissertations. 6497. <http://digitalcommons.usu.edu/etd/6497>
- HDR Inc. 2021a. Barneby Ridge-cross Survey data. GIS point data received on September 9, 2021. HDR Inc is a consultant to the Seven County Coalition.
- HDR Inc. 2021b. 2021 Ute ladies'-tresses Survey Results. Uinta Basin Railway Project. September 8, 2021. 4 pp.
- Heidel, B. 2001. Monitoring Ute ladies'-tresses (*Spiranthes diluvialis*), in Jefferson County, Montana, final report, 1996-2000. Report prepared for the Bureau of Land Management Montana State Office and Butte Field Office by the Montana Natural Heritage Program, Helena, MT.
- Hinz, H. 2017. "Permission to receive *Lepidium barnebyanum* seed from Denver Botanic Gardens". Email to Elizabeth Katovich. Country Director and Head Weed Biological Control, CABI Centre Switzerland. 6 pp.

- Hobbs, M.L. 2001. Good practice guide for assessing and managing the environmental effects of dust emissions. Published September 2001 by Ministry for the Environment. P.O. Box 10-362, Wellington, New Zealand. 58 pp.
- Hochstatter, F. 1989. The Genus *Sclerocactus* (Revised). Published by the author. Mannheim, Germany.
- Holmgren, N.H., P.K. Holmgren, J. Reveal, and collaborators. 2012. Intermountain flora: Vascular Plants of the intermountain west, volume 2, part A. pages. 676-676.
- Hornbeck, J.H. 2020. Utah Cactus Quantitative Recovery Criteria Development. Report prepared by Manzanita Botanical Consulting, Salt Lake City, Utah for U.S. Fish and Wildlife Service Utah Field Office, West Valley City Utah. 1 12 pages + appendices.
- Howard, J., and J. Caldwell. 2018. Population Estimates for Humpback Chub (*Gila cypha*) in Desolation and Gray Canyons, Green River, Utah 2001-2015. Final Report of Utah Division of Wildlife Resources to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.
- Idaho Conservation Data Center. 2007. 2007 Ute ladies'-tresses (*Spiranthes diluvialis*) monitoring on the South Fork Snake River, Idaho: fifth year results. Idaho Department of Fish and Game, Boise, Idaho. 56 pp. plus appendices.
- Institute for Clean and Secure Energy. 2013. A market assessment of oil shale and oil sands development scenarios in Utah's Uinta Basin. The University of Utah. 339 pp.
- Jackson, J. A., & J. M. Hudson. 2005. Population Estimate for Humpback Chub (*Gila cypha*) in Desolation and Gray Canyons, Green River, Utah 2001-2003. Salt Lake City, Utah: Upper Colorado River Basin Endangered Fish Recovery Program Project # 22k. 35 pp.
- Jennings, W.F. 1989. Final report Colorado Natural History Small Grants Program. Species studied: *Eustoma grandiflorum*, *Spiranthes diluvialis*, *Malaxis brachypoda*, *Hypoxis hirsuta*, *Physaria bellii*, *Aletes humilis*. Report prepared for The Nature Conservancy.
- Juliusson, L. 2020. *Spiranthes diluvialis*: Species Range Model Process Summary and associated GIS output data. Prepared for U.S. Fish and Wildlife Service, Legacy Region 6, Lakewood, CO. 10 pp + raw data.
- Kendrick, G.D., editor. 1989. Beyond the Wasatch: The history of irrigation in the Uinta Basin and Upper Provo River Area of Utah. Unpublished report prepared by The National Park Service, Rocky Mountain Regional Office, and The Bureau of Reclamation, Upper Colorado Regional Office. Interagency Agreement number 3AA-40-00900. 125 p.
- Kopec, K. and L. A. Burd. 2017. A systematic status review of North American and Hawaiian native bees. The Center for Biological Diversity. 15 pp.

- Lewis, M. 2013. Roads and the reproductive ecology of *Hesperidanthus suffrutescens*, an endangered shrub. Master of Science thesis, Utah State University 121 pp.
- Lewis, M. 2016. "Re: Some dusty questions" Email response to Hilary Whitcomb (USFWS) regarding his 2013 thesis results. Bureau of Land Management Botanist Vernal, Utah. 3p.
- Lindstrom, J. 2021. Barneby Ridge-cress SRP Current Range Development – 4/13/2021. U.S. Fish and Wildlife Service Species Range Project (SRP) Team and Utah Ecological Services Field Office, West Valley City, UT. 2 pp.
- Liu, H., D. Weisman, Y.B. Ye, B. Cui, Y.H. Huang, A. Colon-Carmona, and Z.H. Wang. 2009. An oxidative stress response to polycyclic aromatic hydrocarbon exposure is rapid and complex in *Arabidopsis thaliana*. *Plant Science* 176 (3):375–382.
- Martínez-Berdeja, A., and Valverde, T. 2008. Growth response of three globose cacti to radiation and soil moisture: an experimental test of the mechanism behind the nurse effect. *J. Arid Environ.* 72, 1766–1774.
- McAda, C. W. 2003. Flow recommendations to benefit endangered fishes in the Colorado and Gunnison rivers. Prepared for the Upper Colorado River Endangered Fish Recovery Program. Recovery Program Project No. 54. Denver, Colorado.
- McCrea, P.R. 1984. An Assessment of the Effects of Road Dust on Agricultural Production Systems. Research Report No. 156. Dated August 1984. Agricultural Economics Research Unit, Lincoln College, Canterbury, New Zealand. 169 pp.
- Modde, T., & C. Keleher. 2003. Flow recommendations for the Duchesne River with a synopsis of information regarding endangered fish. Final Report submitted to the Upper Colorado River Basin Endangered Fishes Recovery Implementation Program. Project No. 84-1.
- Mortensen, D., E. Rauschert, A. Nord, and B. Jones. 2009. Forest roads facilitate the spread of invasive plants. *Invasive Plant Science and Management* 2(3): 2009.
- Mustajarvi, K., P. Siikamäki, S. Rytönen and A. Lammi. 2001. Consequences of plant population size and density for plant – pollinator interactions and plant performance. *Journal of Ecology* 89: 80 – 87.
- Muth, R.T., L.W. Crist, K.E. LaGory, J.W. Hayse, K.R. Bestgen, T.P. Ryan, J.K. Lyons, and R.A. Valdez. 2000. Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam. Upper Colorado River Endangered Fish Recovery Program, Project FG-53.
- Myers-Smith, I.H., B.K. Arnesen, R.M. Thompson, F.S. Chapin III. 2006. Cumulative impacts on Alaskan arctic tundra of a quarter century of road dust. *EcoScience* 13:503– 510.

- Osmundson, D. B. 1999. Longitudinal variation in temperature and fish community structure in the upper Colorado River: implications for Colorado pikeminnow habitat suitability. Final Report to the Recovery Program for the Endangered Fishes of the Upper Colorado River, Project Number 48. U.S. Fish and Wildlife Service, Grand Junction, Colorado.
- Osmundson, D. B. 2003. Removal of non-native centrarchids from upper Colorado River backwaters, 1999-2001: summary of results. Recovery Implementation Program Project No. 89. Colorado River Fishery Project, U.S. Fish and Wildlife Service, Grand Junction, Colorado. 35 pp.
- Padgett, P.E., W.M. Dobrowolski, M.J. Arbaugh, and S.A. Elaison. 2007. Patterns of Carbonate Dust Deposition: Implications for Four Federally Endangered Plant Species. *Madrono* 54(4): 275 – 285.
- Pence, V. 2009. “Re: Need info asap on propagation of Ute ladies’-tresses orchid”. Email to Lucy Jordan. August 28, 2009.
- Pierson, K. and V.J. Tepedino. 2000. The pollination ecology of a rare orchid, *Spiranthes diluvialis*: Implications for conservation. Report prepared for Uinta National Forest by Utah State University, Logan, UT.
- Porter, J. M., J. Cruse-Sanders, L. Prince and R. Lauri. 2007. An assessment of Genetic Relationships among *Sclerocactus brevispinus*, *S. wetlandicus*, and *S. glaucus*, unpublished.
- Reisor, R. 2013. Final Report: 2012 and 2013 Post-transplant Monitoring of *Sclerocactus wetlandicus* for Questar Mainline 104, Appendix A. Red Butte Garden and Arboretum, University of Utah, Salt Lake City, Utah. December 2013. 8 pp., Appendix A, 9pp.
- Reisor, R. 2021. Field Report: Barneby ridge-cress (*Lepidium barnebyanum*). USFWS Botanist, West Valley City, Utah. 11 pp.
- Riedel, L. 2002. *Spiranthes diluvialis* update: habitat, conservation issues, and monitoring. City of Boulder Open Space and Mountain Parks, Boulder, CO.
- Robertson, I.C., and D. Klemash. 2003. Insect-mediated pollination in slickspot peppergrass, *Lepidium papilliferum* L. (Brassicaceae), and its implications for population viability. *Western North American Naturalist* 63:333-342.
- Salguero-Gómez, R. and B.B. Casper. 2010. Keeping plant shrinkage in the demographic loop. *Journal of Ecology*. 98:312-323
- Santelmann, M.V. and E. Gorham. 1988. The influence of airborne road dust on the chemistry of Sphagnum mosses. *Journal of Ecology* 76:1219–1231.

- Sharifi, M.R., A.C. Gibson, and P.W. Rundel. 1997. Surface dust impacts on gas exchange in Mojave desert shrubs. *The Journal of Applied Ecology* 34:837–846.
- Sheviak, C.J. 1984. *Spiranthes diluvialis* (Orchidaceae), a new species from the western United States. *Brittonia* 36(1): 8–14.
- Shyrock, D.F., T.C. Esque, and L. Hughes. 2014. Population viability of *Pediocactus bradyi* (Cactaceae) in a changing climate. *American Journal of Botany* 101(11):1944–1953.
- Silver, C.S. 2007. Development, Dust, and Rock Art in Nine Mile Canyon, Utah. A preliminary report on the impact of dust generated by industrial traffic on dirt roads in Nine Mile Canyon. 76 pp.
- Simberloff, D., J. Martin, P. Genovesi, V. Maris, D. Wardle, J. Aronson, F. Courchamp, B. Galil, E. Garcia-Berthou, M. Pascal, P. Pysek, R. Sousa, E. Tabacchi and M. Vila. 2013. Impacts of biological invasions: what’s what and the way forward. *Trends in Ecology and Evolution*. 28(1): 58-66.
- Sipes, S.D., P.G. Wolf, and V.J. Tepedino. 1995. The pollination and reproduction of *Spiranthes diluvialis*: Implications for conservation of four populations. Report prepared for the Bureau of Land Management by Utah State University, Logan, UT.
- Sipes, S.D., and V.J. Tepedino. 1995. Reproductive biology of the rare orchid, *Spiranthes diluvialis*: breeding system, pollination and implications for conservation. *Conservation Biology* 9(4): 929–938.
- Spat, P.S. and M.C. Miller. 1981. Growth conditions and vitality of sphagnum in a tundra community along the Alaska Pipeline Haul Road. *Arctic* 34:48–54.
- Spector, T. 2015. Field Visit Report: *Lepidium barnebyanum* survey on the Utah DNR Cottonwood State Wildlife Area. USFWS Botanist, West Valley City, Utah. 7 pp.
- Spinti, J. J. Wilkey and colleagues (J. Bauman, M. Hogue, K. Kelly, T. Ring, J. Ruple, K. Uchitel). 2013. Assessment of Unconventional Fuels Development Costs. University of Utah Unconventional Fuels Conference May 7, 2013. 18 pp.
- Surface Transportation Board (STB). 2021. Biological Assessment for the Uinta Basin Railway Project. 112 pp.
- Tepedino, V.J., T.L. Griswold, and W.R. Bowlin. 2010. “Reproductive biology, hybridization, and flower visitors of rare *Sclerocactus* taxa in Utah’s Uinta Basin.” *Western North American Naturalist* 70(3):377-386. Upper Colorado River Endangered Fish Recovery Program and San Juan River Basin Recovery Implementation Program. 2010. 2009-2010 Highlights. Denver, Colorado.

- Thompson, J.R., P.W. Mueller, W. Fluckiger, and A.J. Rutter. 1984. The effect of dust on photosynthesis and its significance for roadside plants. *Environmental Pollution* 34:171–190.
- Tidd, L., L. Sliker, D. Braitman, C. Lee-Roard, and L. Ballard. 2013. Assessing the Extent and Determinants of Induced Growth. FHWA/MT-13-004/8216. Prepared for the State of Montana Department of Transportation in cooperation with the U.S. Department of Transportation Federal Highway Administration. Prepared by the Louis Berger Group Inc. Morristown, NJ. 176 pp.
- Trombulak, S.C. and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology* 14:18–30.
- Tyus, H.M. and J.M. Beard. 1990. *Esox lucius* (Esocidae) and *Stizostedion vitreum* (Percidae) in the Green River basin, Colorado and Utah. *Great Basin Naturalist* 50(1): 33-39.
- Uinta Basin Railway Final EIS Chapter 1, 2021. Purpose and Need. August 2021. 8 pp.
- Upper Colorado River Endangered Fish Recovery Program (Recovery Program). 2014. Upper Colorado River Basin Nonnative and Invasive Aquatic Species Prevention and Control Strategy. Denver, CO. 160 pp.
- U.S. Fish and Wildlife Service (USFWS). 1990. Recovery Plan for the Uinta Basin Hookless Cactus. U.S. Fish and Wildlife Service, Region 6, Denver, Colorado. 26 pp.
- USFWS. 1992. Endangered and Threatened wildlife and plants; final rule to list the plant *Spiranthes diluvialis* as a Threatened species. *Federal Register* 57(12): 2048–2054.
- USFWS. 1993. Barneby Ridge-cress (*Lepidum barnebyanum*) Recovery Plan. U.S. Fish and Wildlife Service, Denver, CO. 20 pp.
- USFWS. 1995. Ute ladies'-tresses (*Spiranthes diluvialis*) agency review draft recovery plan. U.S. Fish and Wildlife Service Region 6, Denver, CO.
- USFWS. 1997. Intra-Service Section 7 consultation for elimination of fees for water depletions for water depletions of 100 acre-feet or less from the Upper Colorado River Basin. Denver, CO.
- U.S. Fish and Wildlife Service (USFWS). 1999. Final programmatic biological opinion for Bureau of Reclamation's operations and depletions, other depletions, and funding and implementation of Recovery Program actions in the upper Colorado River above the confluence with the Gunnison River. U.S. Fish and Wildlife Service, Denver, Colorado.
- USFWS. 2002a. Colorado pikeminnow (*Ptychocheilus lucius*) Recovery Goals: amendment and supplement to the Colorado Squawfish Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 111 pp.

- USFWS. 2002b. Razorback Sucker (*Xyrauchen texanus*) Recovery Goals: amendment and supplement to the Razorback Sucker Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 113 pp.
- USFWS. 2002c. Humpback chub (*Gila cypha*) Recovery Goals: amendment and supplement to the Humpback Chub Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 107 pp.
- USFWS. 2002d. Bonytail (*Gila elegans*) Recovery Goals: amendment and supplement to the Bonytail Chub Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 97 pp.
- USFWS. 2009. Final Gunnison River Programmatic Biological Opinion. U.S. Fish and Wildlife Service, Denver, Colorado.
- USFWS. 2011a. *Lepidium barnebyanum* (Barneby ridge-cress) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Utah Ecological Services Field Office, West Valley City, UT. 22 pp.
- USFWS. 2011b. Humpback Chub (*Gila cypha*): 5 Year Review Summary and Evaluation. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 29 pp.
- USFWS. 2015. Final Green River Diversion Rehabilitation Project Biological Opinion. U.S. Fish and Wildlife Service, West Valley City, Utah.
- USFWS. 2018a. Humpback Chub (*Gila cypha*): 5 Year Review Summary and Evaluation. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 15 pp.
- USFWS. 2018b. Razorback Sucker (*Xyrauchen texanus*): 5 Year Review Summary and Evaluation. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 25 pp.
- USFWS. 2019a. Amendment of the Recovery Plan for Barneby ridge-cress (*Lepidium barnebyanum*). U.S. Fish and Wildlife Service, Utah Ecological Services Field Office, West Valley City, UT. 10 pp.
- USFWS. 2019b. GIS workflow document: Process for evaluating population totals for *Sclerocactus*. Analysis conducted September 2019. U.S. Fish and Wildlife Service, Utah Ecological Services Field Office, West Valley City, Utah.
- USFWS. 2020. Uinta Basin hookless cactus (*Sclerocactus wetlandicus*) and Pariette cactus (*Sclerocactus brevispinus*): 5 Year Review Summary and Evaluation. US Fish and Wildlife Service, Mountain-Prairie Region. West Valley City, Utah. August 10, 2020. 15 pp.

- USFWS. 2021a. Barneby ridge-cress (*Lepidium barnebyanum*): 5 Year Review Summary and Evaluation. US Fish and Wildlife Service, Mountain-Prairie Region. West Valley City, Utah. 6 pp.
- USFWS. 2021b. UBRR GIS Analysis. USFWS generated spreadsheet use to track population numbers, effects and disturbances for plant species relating to the Uinta Basin Railroad biological opinion. Last updated 9/14/2021.
- USGS. 2021. Annual flow data for the Green River at Jensen, Utah. Available online at: <https://waterdata.usgs.gov/ut/nwis/uv?09261000>
- Utah Department of Transportation (UDOT). 2021. Annual Average Daily Traffic (AADT) for Route 191 Emma Park Road via SR 191 to 400 South Fairgrounds, Duchesne, Utah. Accessed on September 1, 2021. 1 page. Available at: <https://www.udot.utah.gov/connect/business/traffic-data/traffic-statistics/>.
- Utah Geological Survey (UGS). 2018. Survey Notes May 2018. Volume 50, Number 2. 5 pp.
- Ute Indian Tribe. 2015. Ute Indian Tribe's Sclerocactus Management Plan for the Uintah and Ouray Indian Reservation; Uinta Basin, Utah. Prepared for the Ute Indian Tribe by Kleinfelder, Inc. August 25, 2015. 118 pp.
- Vernath, J.M., E.R. Pardyjak, and G. Seshadri. 2003. Vehicle-generated fugitive dust transport: analytic models and field study. *Atmospheric Environment* 37: 2295 – 2303.
- Ward, J., and T. Naumann. 1998. Ute ladies'-tresses orchid (*Spiranthes diluvialis* Sheviak) Inventory, Dinosaur National Monument and Browns Park National Wildlife Refuge. Report prepared for the National Park Service by Dinosaur National Monument.
- Waser, N.M., M.V. Price, G. Casco, M. Diaz, A.L. Morales, and J. Solverson. 2017. Effects of Road Dust on the Pollination and Reproduction of Wildflower. *International Journal of Plant Sciences*. 178(2). 9p.
- Watkins, R. Z., J. Chen, J. Pickens, and K. D. Brosofske. 2003. Effects of forest roads on understory plants in a managed hardwood landscape. *Conservation Biology* 17(2):411-419.
- Wells, T.C.E. 1981. Population ecology of terrestrial orchids. In: Synge H (ed) *The Biological Aspects of Rare Plant Conservation*. John Wiley & Sons, Ltd., New York, pp. 281-295.
- Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C Higgins (editors). 2008. *Utah Flora* 4th edition: Brassicaceae (Cruciferae), pp. 336-337. Brigham Young University, Provo, Utah.
- Welsh, S. L., N. D. Atwood, et al. 2016. *A Utah Flora*, fifth edition. Provo, Utah, Brigham Young University, Provo, Utah.

- Wijayratne, U.C., S.J. Scoles-Sciulla, and L.A. Defalco. 2009. Dust Deposition Effects on Growth and Physiology of the Endangered *Astragalus jaegerianus* (Fabaceae). *Madrono* 56(2): 81 – 88.
- Wilkomirski, B., B. Sudnik-Wojcikowska, H. Galera, M. Wierzbicka, and M. Malawska. 2011. Railway Transportation as a Serious Source of Organic and Inorganic Pollution. *Water, Air, & Soil Pollution* 218(1–4):333–345.
- Young, A.G., A.H.D. Brown, and F.A. Zich. 1999. Genetic structure of Fragmented Populations of the Endangered Daisy *Rutidosia leptorrhynchoides*. *Conservation Biology* 13(2): pp. 256 – 265.
- Zelasko, K.A., K.R. Bestgen, and G.C. White. 2018. Abundance and survival rates of razorback suckers *Xyrauchen texanus* in the Green River, Utah, 2011-2013. Final Report of Larval Fish Laboratory, Colorado State University to Upper Colorado Endangered Fish Recovery Program, Denver, Colorado.

Appendix A

PROJECT CONSERVATION MEASURES

Acronyms

BRC – Barneby ridge-cress

MM – mandatory measure

MSO – Mexican Spotted Owl

OEA – Office of Environmental Analysis, a division of the Surface Transportation Board

SCL – Sclerocactus, Uinta Basin hookless cactus and Pariette cactus

ULT – Ute ladies'- tresses

CRF – Colorado River fishes

VM – Voluntary Measure

A.1 General Measures

- MM-1. The Coalition shall conduct preconstruction surveys of ESA-listed plants (Barneby ridge-cress, Pariette cactus, Uinta Basin hookless cactus, and Ute ladies'-tresses) along the Action Alternative licensed by the Board and after final engineering of that Action Alternative is complete. These preconstruction surveys should be conducted by a qualified botanist and should follow the USFWS Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of ESA-listed, Proposed, and Candidate Plants (USFWS 2011c). Qualified botanists must attend the annual USFWS Uinta Basin Rare Plant Workshop every four years (training is good for three years). OEA notes that the USFWS is currently evaluating the Barneby ridge-cress range and suitable habitat requirements. This could alter the amount of suitable habitat affected by the proposed project. Preconstruction surveys would take into account the best available USFWS information on the species' range and habitat requirements in conducting those surveys.
- MM-2. The Coalition shall consult with OEA and USFWS regarding appropriate compensatory mitigation for impacts on ESA-listed plants that are identified in suitable habitat areas during preconstruction surveys and shall implement the compensatory mitigation that OEA and USFWS approve.
- MM-3. The Coalition shall implement measures to reduce collision risks from project-related power communications towers. The Coalition shall incorporate the design recommendations in the USFWS Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning (USFWS 2018) to avoid or minimize the risk of bird mortality at communications towers.
- MM-4. During project-related construction, the Coalition shall minimize, to the extent practicable, soil compaction and related effects (e.g., increase runoff and erosion), and provide surface treatments to minimize soil compaction (e.g., break up compacted soils during reclamation to promote infiltration) and shall take actions to promote vegetation regrowth after facilities (e.g., temporary staging areas) are no longer needed to support construction.

- MM-5. The Coalition shall develop and implement a wildfire management plan in consultation with appropriate state and local agencies, including local fire departments. The plan shall incorporate specific information about operation, equipment, and personnel on the rail line that might be of use in case a fire occurs and shall evaluate and include as appropriate site-specific techniques for fire prevention and suppression.
- MM-6. The Coalition will finalize all plans for mitigating species specific effects described below (i.e., identifying lands for permanent protections, payments to conservation funds, funding surveys) with our office prior to initiating construction. The Coalition will finalize and provide proof of payment for any payments to species specific conservation funds or recovery programs prior to construction.
- MM-7. The Coalition shall share the results of all threatened and endangered species surveys with the USFWS, the State of Utah, and all action agencies except for surveys occurring on Ute Indian Tribal land. For data from surveys on Ute Indian Tribal land, the Coalition shall seek the permission of the Ute Indian Tribe before sharing the survey results with the USFWS, the State of Utah, and all action agencies.

A.2 Species-Specific Measures

A.2.1 Barneby Ridge-Cress (Suitable Habitat Areas)

- BRC-1. The Coalition shall design project infrastructure to minimize effects within suitable habitat, to the extent practicable.
- BRC-2. The Coalition shall place signing to limit off-road travel in sensitive areas.
- BRC-3. The Coalition shall stay on designated routes and other cleared/approved areas.
- BRC-4. The Coalition shall minimize and clearly define ingress and egress access within suitable habitat.
- BRC-5. Prior to construction, the Coalition's project personnel shall be educated about the sensitive nature of the habitat, instructed to stay within the project disturbance area, and instructed on the specific avoidance and minimization measures implemented.
- BRC-6. Except during freezing temperatures, the Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within suitable habitat during construction. During freezing temperatures, sodium chloride solution may be used for dust abatement within suitable habitat to reduce the risk of ice formation.
- BRC-7. To reduce the risk of spreading seeds from noxious and invasive species into suitable habitat, the Coalition shall (1) power wash off-road earthmoving equipment that will be used in areas of suitable habitat within the project right-of-way prior to mobilization of that equipment to the project area, (2) power wash off-road earthmoving equipment being used in areas of suitable habitat within the project right-of-way on a monthly basis when night-time temperatures are above freezing (approximately April 1 through September 30), and (3) restrict off-road earthmoving equipment used within areas infested with noxious and invasive species from use within areas of suitable habitat within the project right-of-way without prior power-washing.

A.2.2. Barneby Ridge-Cress (Occupied Habitat Areas)

- BRC-8. All conservations measures listed for suitable habitat areas shall also apply to occupied habitat areas.

- BRC-9. Before and during construction, the Coalition shall have a qualified biologist identify areas of avoidance in the field (e.g., flagging, temporary fencing, rebar).
- BRC-10. The Coalition shall have a qualified botanist on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures.
- BRC-11. Within occupied habitat, the Coalition shall design project infrastructure to avoid direct disturbance and minimize indirect impacts to populations and individual plants:
 - The Coalition shall design project infrastructure to minimize impacts within occupied habitat, to the extent practicable.
 - The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual plants and/or populations, to the extent practicable.
 - The Coalition shall incorporate into the project design measures, such as silt fences, hay bales, and similar structures or practices, to avoid water flow and/or sedimentation into occupied habitat and avoidance areas.
- BRC-12. The Coalition shall not conduct construction activities from May 1 through June 30 (flowering period) within occupied habitat unless, during the flowering period:
 - The Coalition establishes and implements a dust monitoring and dust control program to prevent significant dust accumulation on Barneby Ridge-Cress in occupied habitat within the project earthmoving footprint (defined as the farthest extent of earthmoving activities, plus 25 feet) and a 300-foot buffer zone measured from the project footprint;
 - The Coalition restricts or reduces, to the greatest extent practical, earthmoving activities (excavation, transportation, and placement) or transportation in occupied habitat within the project footprint and the 300-foot buffer zone;
 - Dust accumulation on Barneby Ridge-cress is monitored by a qualified botanist on a daily basis. If the qualified botanist identifies significant dust accumulation, construction activities that cause or have significant potential to cause dust accumulation within occupied habitat will cease until either (1) a dust-control measure that prevents any new significant dust accumulation from occurring is implemented, or (2) the flowering period (May 1 through June 30) has ended. The Coalition will report within 24 hours any finding of significant dust accumulation to OEA and USFWS;
 - The Coalition reports weekly to OEA and USFWS the results of its dust monitoring and dust control program.
- BRC-13. The Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within occupied habitat during construction.
- BRC-14. The Coalition shall obey a 15-mile-per-hour speed limit on dirt roads within occupied habitat during construction in order to reduce fugitive dust during the time of the year when species, pollinators, and associated habitat are most vulnerable to dust related impacts (April 1 through July 31). Speed limit signs shall be posted in restricted areas for project personnel.
- BRC-15. The Coalition shall re-vegetate all temporarily disturbed areas with native species comprised of species native to the area and non-native species or seed mixtures approved by USFWS. Seed mixtures may include approved non-native species that are

not likely to invade other areas or persist long-term in the habitat. If appropriate for the site, biological soil crusts are recommended to be incorporated into the reclamation process in addition to native seeds.

- BRC-16. If ground-disturbing activities within 300 feet of Barneby ridge-crest plants or populations (i.e., occupied habitat) would be unavoidable, the Coalition shall develop a project-specific plan in consultation with USFWS, OEA, and any appropriate land-management agencies to offset impacts and monitor individuals or populations. The plan shall incorporate the following requirements.
 - The Coalition shall fund the permanent protection of occupied habitat at a 5:1 ratio, where one acre of occupied habitat lost would be replaced by five acres of occupied habitat of equal or better condition for Barneby ridge-crest. If Barneby ridge-crest mitigation is needed, the Coalition will prioritize the Utah Division of Wildlife Resources' (UDWR) Cottonwood Wildlife Management Area for permanent protection of occupied Barneby ridge-crest habitat in consultation with the USFWS and UDWR. If insufficient acreage of documented habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 5:1 ratio.
 - If permanent protection of occupied habitat cannot be achieved at a 5:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with the USFWS, the restoration or enhancement of Barneby ridge-crest habitat at a 5:1 ratio. Habitat restoration or enhancement activities, including maintenance and monitoring activities, shall be conducted in accordance with protocols developed in consultation with and agreed to by USFWS.
 - If neither the permanent protection of occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Barneby ridge-crest identified in consultation with and agreed to by USFWS.
 - If any Barneby ridge-crest individuals would be crushed or killed by project activities, the Coalition shall collect seeds from the plants prior to construction, if possible. Seeds will be collected by a qualified botanist and stored according to USFWS and Center for Plant Conservation guidelines. The Coalition shall deliver any collected seeds to USFWS or designee.
 - If construction activities would crush or kill Barneby ridge-crest individuals on public lands, the Coalition shall consult with the appropriate land-management agency and USFWS prior to undertaking activities that would crush or kill individual Barneby ridge-crest and shall relocate individual plants if requested by the land-management agency. A post-transplant monitoring plan would be developed in agreement with USFWS, and individuals would be monitored for 5 years post-transplant.

A.2.3. Ute Ladies'-Tresses (Suitable Habitat Areas)

- ULT-1. The Coalition shall design project infrastructure to minimize impacts within suitable habitat, to the extent practicable.

- ULT-2. During construction, the Coalition shall avoid soil compaction that would impact Ute ladies' tresses habitat, to the extent practicable.
- ULT-3. The Coalition shall avoid altering site hydrology and concentrating water flows or sediments into occupied habitat, to the extent practicable.
- ULT-4. The Coalition shall place signing to limit off-road travel in sensitive areas.
- ULT-5. The Coalition shall stay on designated routes and other cleared/approved areas.
- ULT-6. The Coalition shall use geotextile matting to protect vegetation and soils from damage and compaction for equipment operating within suitable habitat. Temporary fencing may be used in place of geotextile matting around areas of suitable habitat not beneath embankment and excavation areas.
- ULT-7. Prior to construction, the Coalition's project personnel shall be educated about the sensitive nature of the habitat, instructed to stay within the project disturbance area, and instructed on the specific avoidance and minimization measures implemented.
- ULT-8. Except during freezing temperatures, the Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within suitable habitat during construction. During freezing temperatures, sodium chloride solution may be used for dust abatement within suitable habitat to reduce risk of ice formation.
- ULT-9. To reduce the risk of spreading seeds from noxious and invasive species into suitable habitat, the Coalition shall (1) power wash off-road earthmoving equipment that will be used in areas of suitable habitat within the project right-of-way prior to mobilization of that equipment to the project area, (2) power wash off-road earthmoving equipment being used in areas of suitable habitat within the project right-of-way on a monthly basis when night-time temperatures are above freezing (approximately April 1 through September 30), and (3) restrict off-road earthmoving equipment used within areas infested with noxious and invasive species from use within areas of suitable habitat within the project right-of-way without prior power-washing.

A.2.4. Ute Ladies'-Tresses (Occupied Habitat Areas)

- ULT-10. All conservation measures listed for suitable habitat areas shall also apply to occupied habitat areas.
- ULT-11. Before and during construction, the Coalition shall have a qualified biologist identify areas of avoidance in the field (e.g., flagging, temporary fencing, rebar).
- ULT-12. The Coalition shall not conduct construction activities during the flowing period (typically August through September, depending on location) unless, during the flowering period:
 - The Coalition establishes and implements a dust monitoring and dust control program to prevent significant dust accumulation on Ute Ladies'-tress in occupied habitat within the project earthmoving footprint (defined as the farthest extent of earthmoving activities, plus 25 feet) and a 300-foot buffer zone measured from the project footprint;
 - The Coalition restricts or reduces, to the greatest extent practical, earthmoving activities (excavation, transportation, and placement) or transportation in occupied habitat within the project footprint and the 300-foot buffer zone;
 - Dust accumulation on Ute Ladies'-tresses is monitored by a qualified botanist on a daily basis. If the qualified botanist identifies significant dust accumulation, construction activities that cause or have significant potential to cause dust

accumulation within occupied habitat will cease until either (1) a dust-control measure that prevents any new significant dust accumulation from occurring is implemented, or (2) the flowering period (August through September) has ended. The Coalition will report within 24 hours any finding of significant dust accumulation to OEA and USFWS;

- The Coalition reports weekly to OEA and USFWS the results of its dust monitoring and dust control program.
- ULT-13. Within occupied habitat, the Coalition shall design project infrastructure to avoid direct disturbance and minimize indirect impacts to populations and individual plants:
 - The Coalition shall design project infrastructure to minimize impacts within occupied habitat, to the extent practicable.
 - The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual plants and/or populations, to the extent practicable.
 - The Coalition shall incorporate into the project design measures, such as silt fences, hay bales, and similar structures or practices, to avoid water flow and/or sedimentation into occupied habitat and avoidance areas.
- ULT-14. The Coalition shall not conduct construction activities during the flowering period (typically August through September, depending on location) within occupied habitat.
- ULT-15. The Coalition shall obey a 15 mile per hour speed limit on dirt roads within occupied habitat during construction in order to reduce fugitive dust during the time of the year when species, pollinators, and associated habitat are most vulnerable to dust related impacts (July 1 through September 31). Speed limit signs shall be posted in restricted areas for project personnel.
- ULT-16. The Coalition shall re-vegetate all temporarily disturbed areas with native species comprised of species native to the area and non-native species or seed mixtures approved by USFWS. Seed mixtures may include approved non-native species that are not likely to invade other areas or persist long-term in the habitat.
- ULT-17. If ground-disturbing activities within 300 feet of Ute ladies'-tresses plants or populations (i.e., occupied habitat) would be unavoidable, the Coalition shall develop a project-specific plan in consultation with USFWS, OEA, and appropriate land-management agencies to offset impacts and monitor individuals or populations. The plan shall incorporate the following requirements:
 - The Coalition shall fund the permanent protection of occupied habitat at a 3:1 ratio, where one acre of habitat lost would be replaced by three acres of protected habitat of equal or better condition for Ute ladies'-tresses. If insufficient acreage of documented occupied habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 3:1 ratio.
 - If permanent protection of occupied habitat cannot be achieved at a 3:1 ratio the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with the USFWS, the restoration or enhancement of Ute ladies'-tresses habitat at a 5:1 ratio, where one acre of habitat lost would be replaced by five acres of restored habitat. Appropriate habitat

enhancements may include, but are not limited to, removal of invasive woody vegetation [e.g., Russian olive (*Elaeagnus angustifolia*) or tamarisk (*Tamarix ramosissima*)], removal of native woody vegetation [e.g., Willow (*Salix* spp.)], suitable habitat reconnection, and reestablishment of native herbaceous communities in riparian areas. Habitat enhancements, including maintenance and monitoring of enhancements, shall be conducted in accordance with protocols developed in consultation with and agreed to by USFWS.

- If neither the permanent protection of occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Ute ladies'-tresses identified in consultation with and agreed to by USFWS.
- If any Ute ladies'-tresses individuals would be directly killed by project activities, the Coalition shall fund the collection, transplantation, and monitoring of those individuals. Plants shall be moved to suitable habitat within the same 10-digit hydrologic unit, if possible. If transplantation within the same 10-digit hydrologic unit is not possible because suitable habitat is unavailable or other considerations, plants may be placed in another hydrologic unit identified through consultation with USFWS. Transplanting and monitoring activities shall be conducted in accordance with protocols agreed to by USFWS.

A.2.5 Uinta Basin Hookless Cactus and Pariette Cactus (Suitable Habitat Areas)

- SCL-1. The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual Sclerocactus plants and/or populations, to the extent practicable.
- SCL-2. The Coalition shall design project infrastructure to minimize impacts within suitable habitat, to the extent practicable.
- SCL-3. The Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within the Sclerocactus Habitat Polygon during construction.
- SCL-4. The Coalition shall implement erosion control measures (e.g., silt fencing) to minimize sedimentation or concentrating water flow to Sclerocactus plants and populations located down slope of proposed surface disturbance activities. Such measures should only be installed within the area proposed for disturbance.
- SCL-5. The Coalition shall reclaim all temporarily disturbed areas with plant species native to the region, or seed mixtures approved by USFWS.
- SCL-6. The Coalition shall power wash construction vehicles and equipment prior to entering suitable habitat or when moving between infested areas in order to prevent spreading seeds from noxious and invasive species.

A.2.6 Uinta Basin Hookless Cactus and Pariette Cactus (Core Conservation Area 2)

- SCL-7. All conservations measures listed for suitable habitat areas shall also apply to Core Conservation Area habitat.

- SCL-8. The Coalition shall conduct ground disturbing activities outside of the reproductive period, April 1 through June 30, or as determined by a qualified botanist.
- SCL-9. The Coalition shall minimize surface disturbance to minimize impacts to Sclerocactus and suitable habitat, to the extent practicable.
- SCL-10. If surface disturbance would occur within 300 feet of Sclerocactus or if surface disturbance would exceed USFWS' target threshold for any Core Conservation Area, the Coalition shall implement additional conservation to offset impacts to habitat and individuals (USFWS 2014). Offsets will be based on the USFWS 2014 Ecological Restoration Mitigation Calculation Guidelines for Impacts to Sclerocactus wetlandicus and Sclerocactus brevispinus Habitat or most recent guidelines.

A.2.7. Uinta Basin Hookless Cactus and Pariette Cactus (Occupied Habitat Areas)

- SCL-11. All conservations measures listed for suitable habitat areas and Core Conservation Area habitat shall also apply to occupied habitat areas.
- SCL-12. The Coalition shall conduct ground disturbance activities outside of the reproductive period, (defined as April 1 through June 30 or as determined by a qualified botanist), when within 300 feet of individual Sclerocactus plants and/or populations.
- SCL-13. The Coalition shall have a qualified biologist flag Sclerocactus avoidance areas (within 25 feet of disturbance edge). Flagging shall be immediately removed following construction activity.
- SCL-14. The Coalition shall obey a 15-mile-per-hour speed limit on dirt roads within occupied Sclerocactus habitat during construction in order to reduce fugitive dust during the time of the year when Sclerocactus species, pollinators, and associated habitat are most vulnerable to dust related impacts (March 1 to August 31). Speed limit signs shall be posted in restricted areas for project personnel and signing shall be posted to limit off-road travel in sensitive areas.
- SCL-15. The Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within occupied habitat during construction.
- SCL-16. The Coalition shall have a qualified botanist on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures.
- SCL-17. If new surface disturbance occurs within occupied habitat, the Coalition shall either implement ecological restoration activities to be developed in consultation with and with the agreement of USFWS or may contribute to the Sclerocactus Conservation Fund. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance using the USFWS "2014 Ecological Restoration Mitigation Calculation Guidelines for impacts to Sclerocactus wetlandicus and Sclerocactus brevispinus Habitat." Funds shall be paid to:

Sclerocactus Conservation Fund - BLM
Impact-Directed Environmental Accounts National Fish and Wildlife Foundation
1133 Fifteenth Street NW, Suite 1100
Washington, DC 20005

- SLC-18. If new surface disturbance occurs within occupied habitat on Tribal lands, the Coalition shall abide by the requirements of the 2015 Ute Indian Tribe's Sclerocactus Management Plan for the Uintah and Ouray Indian Reservation, Uinta Basin Utah (Ute Indian Tribe 2015) for mitigation of project-related activities on Tribal lands. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance from the results of pre-construction surveys. The Coalition shall work with our office and the Ute Indian Tribe to calculate the mitigation as described in the Tribe's Sclerocactus Management Plan. Funds shall be deposited to the Tribal Sclerocactus Conservation Fund, as directed by the Ute Indian Tribe.

A.2.8. Mexican Spotted Owl

- MSO-1. The Coalition shall conduct Mexican spotted owl surveys in the moderate-quality habitat along the Wells Draw Alternative should the STB license the Wells Draw Alternative and the Coalition choose to construct the Wells Draw Alternative. The survey method shall be determined in consultation with USFWS.

A.2.9 Colorado River Fishes

- CFR-1. As the project's average annual new depletion of 875 acre-feet is below the current sufficient progress threshold of 4,500 acre-feet, the Recovery Program will serve as conservation measures to minimize adverse effects to the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail, and destruction or adverse modification of critical habitat caused by the project's new depletion.
- CFR-2. With respect to the depletion contribution, the Project applicants will make a one-time payment which has been calculated by multiplying the Project's average annual depletion (acre-feet) by the depletion charge in effect at the time payment is made. The fiscal year 2022 fee for water depletion projects is \$22.84 per acre-foot. Therefore, for the Uinta Basin Railway Project, the Project applicants owe \$19,985.00. Ten percent of the total is due upon issuance of approvals from the STB and other action agencies. The remainder is due when construction of the project commences. However, full payment of the fee is acceptable prior to project initiation if that is easier for the Project applicants.

Please note that the fee rate changes each September 1st based on inflation and your office is responsible for paying the rate in place at time of the writing of the check. Therefore, the rate may change subsequent to the writing of this letter, and the rate may change between the initial 10 percent payment and the payment of the remaining fee. Please check with George Weekley with the U.S. Fish and Wildlife Service Utah Field Office at (385) 285-7929 to ensure the Project applicants pay the correct amount.

Funds are not received by the U.S. Fish and Wildlife Service but are rather deposited into an account held by our partners at the National Fish and Wildlife Foundation (NFWF). Courtney Kwiatkowski is the account manager and can be reached at

Courtney.Kwiatkowski@nfwf.org or (202) 857-0166. The Tax ID for NFWF is 52 1384139. To correctly submit the payments to NFWF please follow the directions below.

Payments can be made via check or secure Electronic Fund Transfer (EFT), although the preferred option of payment is EFT. Please contact NFWF to receive instructions for secure EFT payment. Payments made by check should be mailed to the address below. The check should include the following notation: "Upper Colorado Fish Recovery Program (IM.A131)."

National Fish and Wildlife Foundation
Attn: Chief Financial Officer
1133 15th Street, NW
Suite 1000
Washington, DC 20005

All payments should be accompanied by a cover letter (either mailed or emailed) that identifies the project title noted above, the amount of the payment, the check number (if applicable), the name and address of the payor (Project applicants), the name and address of the Federal Agency responsible for authorizing the project (STB), the USFWS office issuing the biological opinion (Utah ES office), and a note that the payment pertains to the "Upper Colorado Fish Recovery Program." This information will be used by NFWF to notify the Recovery Program within 5 working days that payment was received.

The payment will be accompanied by a cover letter that identifies the project and biological opinion number (06E23000-2020-F-0871) that requires the payment, the amount of payment enclosed, check number, and the following notation on the check – "Upper Colorado Fish Recovery Program, NA.1104". The cover letter also shall identify the name and address of the payor, the name and address of the Federal Agency responsible for authorizing the project, and the address of the USFWS office issuing the biological opinion. This information will be used by the Foundation to notify the STB and the USFWS that payment has been received. The Foundation is to send notices of receipt to these entities within 5 working days of its receipt of payment.

A.2.10. Additional Coalition Voluntary Measures

- VM-1. Prior to initiating any project-related construction activities, the Coalition will develop a spill prevention, control, and countermeasures plan in consultation with Federal, Tribal, State, and local governments. The plan shall specify measures to prevent the release of petroleum products or other hazardous materials during construction activities and contain such discharges if they occur. In the event of a spill over the applicable reportable quantity, the Coalition will comply with its spill prevention, control, and countermeasures plan and applicable federal, state, local, and Tribal regulations pertaining to spill containment, appropriate clean-up, and notifications.
- VM-2. The Coalition will ensure that gasoline, diesel fuel, oil, lubricants, and other petroleum products are handled and stored to reduce the risk of spills contaminating soils or surface waters. If a petroleum spill occurs in the project area as a result of rail

construction, operations, or maintenance and exceeds specific quantities or enters a water body, the Coalition (or its agents) will be responsible for promptly cleaning up the spill and notifying responsible agencies in accordance with Federal, State, and Tribal regulations.

- VM-3. The Coalition will prepare a hazardous materials emergency response plan to address potential derailments or spills. This plan will address the requirements of the Pipeline and Hazardous Materials Safety Administration and FRA requirements for comprehensive oil spill response plans. The Coalition will distribute the plan to Federal, State, local, and Tribal emergency response agencies. This plan shall include a roster of agencies and people to be contacted for specific types of emergencies during rail construction, operation and maintenance activities, procedures to be followed by particular rail employees, emergency routes for vehicles, and the location of emergency equipment.
- VM-4. In the event of a reportable hazardous materials release, the Coalition will notify appropriate Federal, State, and Tribal environmental agencies as required under Federal, State, and Tribal law.
- VM-5. The Coalition will limit ground disturbance to only the areas necessary for project-related construction activities.
- VM-6. The Coalition will submit a notice of intent to request permit coverage under Utah Pollutant Discharge Elimination System Construction General Permit UTRC00000 for construction stormwater management. The Coalition will submit an application for coverage under the NPDES stormwater construction permits pursuant to Section 402 of the Clean Water Act for construction stormwater management on Tribal land. The Coalition will develop a stormwater pollution prevention plan, which will include construction best management practices to control erosion and reduce the amount of sediment and pollutants entering surface waters, groundwater, and waters of the U.S. The Coalition will require its construction contractor(s) to follow all water quality control conditions identified in all permits, including the Section 404 permit from the Corps and the Section 401 Water Quality Certification from the UDEQ and the U.S. Environmental Protection Agency.
- VM-7. The Coalition will revegetate disturbed areas, where practical and in consultation with the Ute Indian Tribe as applicable, when construction is completed. The goal of reclamation will be the rapid and permanent re-establishment of native ground cover on disturbed areas to prevent soil erosion, where feasible. If weather or seasonal conditions prevent vegetation from being quickly re-established, the Coalition will use measures such as mulching, erosion-control blankets, or dust-control palliatives to prevent erosion until vegetative cover is established. The Coalition will monitor reclaimed areas for three years. For areas where efforts to establish vegetative cover have been unsuccessful after one year, the Coalition will reseed annually for up to three years as needed.
- VM-8. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for sensitive species that could potentially be impacted by the project.
- VM-9. The Coalition will prepare a noxious and invasive weed control plan in consultation with the Ute Indian Tribe where applicable. Where practical, the Coalition will include the policies and strategies in Utah's Strategic Plan for Managing Noxious and Invasive Weeds when designing response strategies for noxious and invasive weeds.

- VM-10. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for ESA-listed plant species that could potentially be affected by the Project.